

**Program and Project Management
Improvement Task Force**

Procedure For Managing Projects

**The New Capital Program and Project
Management System for DOT**

Third Working Draft

New York State Department of Transportation

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September 3, 1991

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Introduction

The project management process involves planning, coordinating, monitoring, and controlling all aspects of capital projects from inception through project close out. Project management responsibilities include coordination and decision making actions necessary to integrate all individual project jobs to create a capital project, and advance it within the constraints of a regional program.

This procedure for managing projects is presented to provide staff involved in managing projects with general instructions on their roles in the project process. It is intended to assist them as they perform their duties in advancing capital projects through the Department's new project management system.

The procedure is written from a project process perspective. The procedure, keyed to the major stages in the general project process, serves as a framework for advancing projects and defining the relationships of parties involved in the process. When projects have unique aspects, the procedure should, of course, be modified as appropriate.

This Third Working Draft replaces the Second Working Draft and Amendment PP-1 and is to be used as the procedural basis for project management. The basic concepts of the program and project management system have not been changed in this Third Working Draft, but details and lay-out have been refined based on a year's experience with progressing pilot projects using the Second Working Draft.

I. GENERAL INFORMATION

This chapter provides 1) an overview of the procedures for managing projects, 2) guidelines for the use of the procedures, 3) definitions of key managers, products and events, and concepts, 4) a list of acronyms used in this manual, and 5) an identification of the roles and responsibilities of key participants.

A. Overview

The procedure for managing projects explains how to advance a project under the new capital program and project management system. After a project is identified and accepted for the program by the Regional Director, a time for starting the project within the program's time frame is specified. When the project is started, the Regional Planning and Program Manager (RPPM), depending on project nature and complexity and staff availability, either assigns a project manager directly from the RPPM group or recommends a project manager from a functional area to the Regional Director after consulting with the appropriate functional manager. More complicated projects are generally managed by project managers from the RPPM group, while less complicated projects are managed by project managers from within functional areas. Project managers are also responsible to their functional manager for regular duties.

A project manager coordinates all major jobs necessary to deliver the project. This has two aspects.

First, this means planning project production activities with functional managers and specifying needed jobs to produce the project. This planning is documented in a project management plan covering production responsibilities and specifying the roles of the major project participants, also known as job managers.

Second, this means monitoring activities, events, and jobs so that steps may be taken when needed to keep projects moving in accord with the project's Cost, Scope, Schedule and Quality (CSSQ) Agreement, or amending or renegotiating the agreement as events dictate.

A project may require more than one CSSQ Agreement during its life. Depending on the resources required to produce the project, up to three sequentially executed CSSQ Agreements may be required. If, for example, resources needed to do project scoping are substantial, a CSSQ Agreement for project scoping will be created to specify needed studies, hearings, and so forth. Similarly, there may be a further agreement for preliminary design work if that work is considerable and extensive. All projects will have at least one CSSQ Agreement to cover work from detailed design through construction.

Finally, the procedure provides information on several concepts and definitions new to the Department. Relatively detailed descriptions of CSSQ Agreements, Project Management Plans, and other concepts are provided in Chapter III.

CSSQ Agreement
COST
SCOPE
SCHEDULE
QUALITY

B. Guidelines

The Procedure for Managing Projects governs projects to be managed under the new capital program and project management system. When using this procedure, several guidelines should be kept in mind. The guidelines cover applying, interpreting and updating the information in it.

1. Applying the Procedure

Not everything in the procedure will be perfectly suitable for every project situation every time. The user must be flexible; ready and willing to interpret and apply the procedure's intent and modify actions accordingly. Because the user inevitably will encounter at least minor conflicts between the procedure and other department procedures and practices, some improvisation will always be needed. When necessary, the user should make accommodations and be prepared to explain the reasons for departing from this procedure.

When encountering inconsistency or ambiguity, the user should compare this procedure's logic to the other procedure or practice. When they are reasonably compatible, the user may rely on current practice for guidance. When they aren't, the user should try to extrapolate this procedure's logic and find a solution compatible with the intent of this procedure.

Comments, questions and requests for interpretations on this procedure should be directed to the Office of Planning and Program Management, which is responsible for interpreting and revising this procedure.

2. Interpreting the Procedure

This procedure should not always be interpreted literally. For instance, when the procedure says the Regional Director has a certain decision responsibility and authority, the procedure doesn't necessarily mean the Regional Director personally makes the decision. The procedure intends, of course, that such authorities may be delegated. Similarly, references in this procedure to roles, functions, titles, locations and the like often require the user to translate them into actual day-to-day working practice.

Just as the procedure presumes delegation, it also presumes a chain of authority. So, when this procedure identifies authorities resting with the RPPM, understand it to mean that the formal responsibility rests with the Regional Director, though the logical and appropriate actor is the RPPM.

There are other examples of interpretation. The title of project developer is one; whoever is assigned the project scoping responsibilities is the project developer, regardless of actual civil service title. The procedure portrays a typical regional organization; in actuality there is significant variance across the eleven regions. So a function may not always be performed in its own organizational unit in each region, but the procedure's user should still recognize the function is done in some unit and interpret accordingly.

3. Updating the Procedure

This procedure has been and will be subject to careful monitoring, regular analysis, and frequent update. It is expected to evolve with the lessons of experience, just as this Third Working Draft is based on the year's experience of using the Second Working Draft.

Updating depends in good part on information from the users. Much of this information comes through reporting systems, memorandums and phone conversations. Particularly valuable are user suggestions and trouble shooting experiences.

Accordingly, users are encouraged to share their views with the Office of Planning and Program Management. The resulting information will help in updates.

Relatively urgent updates will be done by amendment to this procedure. Keep them with this manual. Though amendments are expected to be rare, if issued at all, check the possibility when in doubt if one exists.

C. Roles and Responsibilities

Many people are affected by this procedure. This section explains the roles and responsibilities of the principal participants. Explanations are given in the context of this procedure and are not necessarily complete. That is, these individuals may have other responsibilities not covered here. The principal participants are:

- o Regional Planning and Program Manager
- o Project Manager

- o Functional Managers
- o Job Managers

1. Regional Planning and Program Managers (RPPM)

The Regional Planning and Program Manager (RPPM) directs the Region Planning and Program Management Group. The RPPM is responsible for several areas of activity, including regional transportation systems planning, capital program planning and management, and capital project management. This last activity includes direction of the region's project managers. These project managers directly communicate with and are accountable for their project management activities to the RPPM, although project managers not from the RPPM Group are supervised on a day-to-day basis by their functional managers. The RPPM reports to the Regional Director.

The RPPM Produces:

- o Region transportation needs forecasts, evaluations of system alternatives, and current systems plans;
- o Region five year capital program fiscal summaries;
- o Region capital program goals, emphasis, obligation schedules and project listings;
- o Region program status and evaluation reports;
- o Updates of policy and procedures for region project management with oversight by Office of Planning and Program Management;
- o The region letting schedule; and
- o Expanded Project Proposals.

The RPPM Is Accountable For:

- o Negotiating and accomplishing region program goals within region allocations;
- o Monitoring and evaluating region program management;
- o Evaluating the project management performance of project managers;
- o Obtaining necessary project funding (obligations) from Office of Planning and Program Management;
- o Keeping the region program current and in fiscal balance;
- o Coordinating maintenance and capital program fiscal summaries; and
- o Ensuring that lettings and obligations are on schedule.

The RPPM Has Authority For:

- o Managing the capital program for the region;
- o Negotiating Transportation Improvement Programs with local governments through the Metropolitan Planning Organization;
- o Approving, prioritizing and controlling projects during all production phases;
- o Resolving project production priority issues and CSSQ changes; and
- o Supervising project managers from the RPPM Group and holding other project managers accountable for project management duties.

2. Project Managers

Project managers can be assigned from either the RPPM group or from other functional groups:

- A project manager (PM) in the Region Planning and Program Management Group plans, monitors, coordinates and evaluates project activities from

the initial project proposal through post-construction review. Project management is their major activity, and they are generally assigned several projects; usually Group B and Group C projects (See Chapter III, Section A, for a description of project groups). This PM reports to the Regional Planning and Program Manager, either directly or through a supervisor.

- A project manager (PM) located in a Region Functional Group other than the RPPM Group also plans, monitors, coordinates and evaluates project activities from the initial project proposal through post-construction review for a specific assigned project. This PM may have project management responsibilities for several projects, and job production responsibilities for these or other projects as well. This PM reports to the functional manager for job production and functional area duties unrelated to project management.

The Regional Director designates the PM from the functional area based on recommendations of the RPPM and appropriate functional manager. The PM continues to be supervised from within the functional group. Direct communications are established between the PM and RPPM for routine project monitoring, coordination, and status reporting. The RPPM and the PM's functional group supervisor assure that the PM receives needed administrative and technical support for both functional area and project management duties.

Throughout project production, the PM monitors the progress of job production to ensure it is in accord with the executed CSSQ Agreement (CSSQA), or if there is no CSSQA, an informal Project Management Plan (PMP). The PM carries out these monitoring and other

responsibilities, as listed below, by developing and following a communication "system" appropriate to the project. This communication system, whether formal or informal, is simply the device to ensure the PM, the job managers and other affected parties communicate with each other. Regions may have guidelines for formal communications - memos, form status reports, etc. - which the PM may supplement with regular informal telephone contacts. The functional and job managers are responsible for early communication to the PM of possible problems or changes to the CSSQA. The PM is responsible for securing a resolution for such problems and for processing any resulting changes to the CSSQA.

In addition to implementing the current CSSQA the PM is also developing the draft PMP leading to approval of a new CSSQA for the next stage of project production.

The Project Manager Produces:

- o CSSQ Agreements including Project Management Plans;
- o Project status reports and special issue documentation;
- o Projects completed within authorized CSSQ boundaries; and
- o Project post-construction review reports.

The Project Manager Is Accountable For:

- o Adequate project scoping and production planning;
- o Monitoring and evaluating the progress of project jobs;
- o Securing early identification and resolution of problems and issues;

- o Keeping CSSQ Agreements current;
- o Assuring transfer of information from job manager to job manager across functional areas; and
- o Maintaining a complete file of key project records and transactions.

The Project Manager Has Authority For:

- o Negotiating CSSQ changes on behalf of the RPPM;
- o Resolving or elevating production priority problems; and
- o Assisting functional and job managers in the resolution of conflicts with internal units and outside agencies.

3. Functional Managers

Functional managers head region and main office functional areas which produce capital projects. These functional areas include a wide array of planning, engineering, contracting, and construction management activities.

Region functional managers include the Regional Design Engineer, the Regional Structures Engineer, the Regional Maintenance Engineer, the Regional Construction Engineer, the Regional Real Estate Officer, the Regional Traffic Engineering and Safety Engineer, and the Regional Planning and Program Manager. Regional functional managers are primarily responsible for producing or contributing to project jobs, and controlling the quality of job products and processes. Regional functional managers, of course, support the project management efforts of subordinates who are project managers.

Main office functional managers are typically Division and Bureau Directors. Their primary responsibilities include setting statewide functional policy, procedures, and standards; providing technical support; and providing statewide quality assurance for their function. Quality assurance activities include project reviews, continuous evaluation and update of policy, procedures, and standards and assurance of compliance with those policies, procedures and standards. Responsibilities also may include project job production or other project work as per arrangements with the region. For example, the Structures Division produces bridge design jobs for regions.

All Functional Managers Produce:

- o Completed jobs within agreed on CSSQA limits;
- o Job production audits and evaluations for quality assurance (and quality control when appropriate) within their functional specialty;
- o Timely and thorough reviews when requested; and
- o Project or job status reports.

All Functional Managers Are Accountable For:

- o Optimum use of functional area resources (staff, equipment, and consultants);
- o Committing to the production of project jobs within agreed on cost, schedule, and scope;
- o Maintaining quality of functional area products and processes through appropriate control and assurance measures;
- o Promptly advising project managers of possible need to change the CSSQ Agreement; and
- o Providing functional area's assistance in project scoping; design and construction.

All Functional Managers Have Authority For:

- o Planning, allocating, and controlling functional resources;
- o Committing job production resources to projects;
- o Monitoring and auditing job production;
- o Supervising functional area job managers;
- o Developing and enforcing quality control and quality assurance procedures; and
- o Negotiating and signing CSSQ Agreements.

4. Job Managers

A job manager in a functional area is responsible for producing a significant portion of a project, either directly or through consultant services. For example, a design squad leader may be the job manager for highway design, the structures engineer for bridge design, and the engineer-in-charge for construction. Other jobs would be as project developer, as consultant manager, and so on. Generally, the CSSQ Agreement (in the project management plan) specifies project jobs and job manager responsibilities. These responsibilities may include managing sub-elements of the job that are produced in another functional area. The job manager will do the planning, arranging, and coordinating work necessary to ensure the production of these sub-elements prior to the signing of the CSSQ Agreement. Although job managers work closely with project managers, their direct supervision comes from their functional manager.

The Job Manager Produces:

- o Plans for job cost, scope, schedule, and resource needs;
- o Plans for job sub-elements;

- o Jobs completed within agreed on cost, schedule and scope limits;
- o Job status reports; and
- o Information and assistance to project developer for scoping projects.

The Job Manager Is Accountable For:

- o Job CSSQ;
- o Professional/technical quality of work consistent with applicable policies, procedures and standards;-
- o Adequate and timely notice to functional and project managers of any necessary changes to project cost, schedule, and scope;
- o Managing consultants performing project jobs; and
- o Arranging for completion of assigned job sub-elements.

The Job Manager Has Authority For:

- o Input to project CSSQ Agreements; and
- o Professional, technical and administrative decisions to accomplish jobs within agreed on cost, schedule, and scope limits.

D. Definitions

This section provides definitions of additional participants, products and events, and concepts.

1. Additional Participants:

Project Developer

Director, Office of Planning and Program
Management

2. Products and Events:

Initial Project Proposal	IPP
Expanded Project Proposal	EPP
Project Planning Meeting	PPM
Project CSSQ Meeting	PCSSQ
CSSQ Agreement	CSSQ
Project Management Plan	PMP
Design Approval	DA
Design Approval Document	DAD
Reviews	R
Post-Construction Reviews	P-CR

3. Concepts:

Capital Project
CSSQ
Project Cost
Project Schedule
Project Scope
Project Quality
Project Group
Project Management Allowance
Contingency
Delegation
Decide
Project Job and Job Sub-elements
Quality Control
Quality Assurance
Functional Area
Statewide Significance

1. Additional Participants

A Project Developer (PD) is the person who prepares the "Expanded Project Proposal". This person may be located in the project scoping unit of the region

planning and program management group, in the region design group, or even for selected projects, in a main office unit.

The Director of the Office of Planning and Program Management is responsible for the statewide capital program, statewide systems planning, and coordination of capital and maintenance program policy and procedures issues with executive management.

2. Products and Events

The Initial Project Proposal (IPP) is used for initial planning and program purposes. The IPP is a two page thumbnail sketch, but may have attached to it the results of any prior concept studies done for the more complex projects. It represents a candidate proposal for capital improvement. While an IPP may originate in any functional unit, it always receives systems planning analysis and input in the RPPM's unit. The RPPM completes the program (funding and schedule) information and recommends to the Regional Director the project should be added to the program. The completed IPP represents "first cut" information including:

- o Preliminary description of the problem or the reason for the project
- o Preliminary objective of the project and its relation to program goals
- o Preliminary outline of the project scope
- o Preliminary estimate of construction cost based on experience (See Chapter III, Section D.2.)
- o Preliminary schedule, usually the desired letting date

- o Anticipated NEPA and/or SEQR classification
- o Notes on special circumstances, e.g. public sensitivity, permit requirements, a political commitment, etc.
- o Information for the program listing including anticipated fund source, program letting date, anticipated project management group and statewide significance determination

The Expanded Project Proposal (EPP) is the end product of the scoping stage. The EPP is prepared by the project developer who refines and expands the cost, schedule, and scope information contained in the Initial Project Proposal. From its earliest draft, the EPP follows the format of the document needed to obtain design approval. It will evolve into, but it is not as complete as, the report prepared in phase I of preliminary design. The EPP becomes a part of the CSSQ Agreement for Preliminary Design. There are two primary purposes of the EPP:

1. Present a scope and cost estimate that signatories to the CSSQA for Preliminary Design can accept as 1) a "reasonable approximation" of the scope expected at design approval, and 2) the most accurate cost estimate possible based on available information.
2. Enable the CSSQA signatories to supply the project manager with a good estimate of staff resources needed for preliminary design, with a schedule the designer believes is realistic.

Note: If a project does not require a formal preliminary design stage, (Group A projects), the EPP is not usually published as an independent report.

The Project Planning Meeting's purposes are to determine the appropriate management strategy for the project and to agree on the effort, detail, and schedule for preparing the Expanded Project Proposal. The meeting is convened by the Regional Planning and Program Manager and attended by the project manager and the project developer, if one is assigned. (See Chapter III, Section A.4.)

The Project CSSQ Meeting's purposes are to reach final consensus on the scope of the project and the management plan for producing the next stage of the project. The meeting is convened by the project manager and attended by the project developer, functional/job managers with project jobs, job sub-element producers, and others the project manager or job manager(s) believe necessary. The meeting (or meetings if necessary) provides the opportunity for the participants to negotiate and supply the information necessary to finalize the Expanded Project Proposal and Project Management Plan. (See Chapter III, Section A.4.)

CSSQ Agreements (CSSQA) are agreements between co-workers which define what the project is and how it will be produced. It is a tool for managing the resources needed to produce the project and maintaining communications on the project. CSSQA's are assembled by the project manager and consist of three parts: 1) a signature sheet, 2) a Project Management Plan, and 3) an Initial Project Proposal, Expanded Project Proposal, or a design approval document (Final Design Report, 3R Report or the equivalent). There are three possible types of CSSQA's:

- o CSSQA for Project Scoping
 - o CSSQA for Preliminary Design
 - o CSSQA for Detailed Design and Construction
- (See Chapter III, Section B., for a discussion of these agreements.)

The Project Management Plan (PMP) is prepared by the project manager in consultation with other project participants. It outlines a plan for producing and delivering the next major project stage - either scoping, preliminary design, or detailed design and construction. The PMP identifies functional job responsibilities (including job sub-elements), consultant services required, key events, milestones, schedule of work, anticipated funds needed, any special management objectives and concerns, and quality assurance expectations. As a part of a CSSQ Agreement, the PMP must be sufficiently detailed for CSSQA signatories to know what to expect from their interdependent activities. The PMP will provide continuity for project management even if the project manager changes.

(See Chapter III, Section C. for a full description of a project management plan.)

Design Approval is a project engineering control decision prerequisite to authorizing the commencement of detailed design. It certifies that applicable environmental procedures and engineering analysis requirements have been satisfied, and identifies the design alternative to be developed in detailed design. The information and analysis on which design approval is based is documented in the design approval document.

A Design Approval Document is prepared in accordance with procedures applicable to the project. This document details the results of the project scoping and preliminary design stages, and is sufficiently detailed to provide the basis for issuing design approval.

Reviews consist of one unit or individual examining the work product or process of another. Each review must be preceded by a clear and mutual understanding between the reviewer and reviewee of the review requirements and expectations prior to conducting the review. These requirements and expectations should be standardized for all reviews, and must include:

- o review purpose and scope: what is the review for and what is to be reviewed?
- o review criteria: what policies, procedures, technical standards, CSSQ agreements, or checklists are to be used as the basis of the review?
- o review timing: when is it to be reviewed, how long will it take, when are review comments due?
- o reviewer/review team: who will do the review, what is the review team's structure and qualifications?
- o review reports: what must be documented, what format is to be used, who gets copies and for what purpose?
- o disposition of review findings: what are the obligations of the reviewer and the reviewee regarding the report findings and who has follow-up responsibilities for remedial actions?
- o conflict resolution: how will disagreements over review findings be resolved?

Reviews have two primary purposes: they provide technical and policy assistance for the office doing the work, as well as a means for offices with quality assurance responsibilities to monitor the work products and the quality systems.

Post-Construction Reviews are evaluations of completed construction projects from a variety of performance perspectives. They involve the project manager, the Engineer-in-Charge, various functional/job managers, and others. The primary focus is on:

- o conformance to the CSSQ Agreement,
- o the manner in which CSSQA changes were dealt with,
- o conformance to the technical requirements of the project's contract plans and specifications,
- o assessment of the constructability, operability, maintainability and environmental/community fit of the finished project, and
- o assessment of completed project production and project management actions relative to prevailing policies and procedures.

The review results are summarized in a report prepared by the project manager and provide feedback to functional managers, project managers, job managers and others for any necessary changes to policies, procedures, practices or standards.

3. Concepts

A Capital Project is a set of department planning, design, real estate, contracting, and construction activities organized to deliver a new or improved

transportation facility in conformance with a predetermined schedule, budget, and performance specification.

CSSQ is the acronym for a project's Cost, Schedule, Scope, and Quality. Estimate of CSSQ will be agreed to at early stages in the project and refined as new information becomes available.

Project Cost represents all costs expected to be incurred during project production, including but not limited to the following: preliminary engineering, construction and construction inspection, right-of-way, force accounts, and utilities. (See Chapter III, Section D.)

Project Schedule represents a timed plan for the delivery of project scoping, design, and construction jobs. It includes the expected sequence and dates of key job events and milestones.

Project Scope defines the intended range of physical, operational, financial, and environmental requirements of a proposed project. The project scope is refined sequentially in appropriate project proposals and design reports, increasing in detail and certainty as the project stages proceed. Project scope includes descriptions and explanations of:

- a) the project type and objectives - e.g. two lane bridge replacement to continue an essential crossing
- b) the project location and limits
- c) the project elements - bridges, pavements, drainage, noise walls, sidewalks, lighting, landscape development, parking lanes, passing lanes, traffic control, etc.

- d) the design criteria based on applicable technical standards (e.g., 3R, AASHTO) - such as travel lane widths, shoulder widths, maximum grades, design speed, horizontal and vertical curvature
- e) the desired operational characteristics - such as level of service, safety performance, load ratings
- f) other requirements - for instance, conformance with a specific community need, coordination with a nearby project, aesthetics

Project Quality means conformance to customer requirements. These requirements are embodied in the project's negotiated cost, schedule, and scope (which includes technical standards). Thus a project developed, designed, and constructed in accordance with applicable policies, procedures and standards and delivered within the cost, schedule and scope in the CSSQ Agreement is a quality project.

The project manager, functional managers, RPPM and other key participants, work to balance the cost, schedule and scope to reflect a fair composite of all customers' requirements. Customers are those with an interest in the project. They are diverse, both internal and external to the Department, and include:

- o those to whom the work is committed - (e.g. the State Legislature, local officials, the public);
- o those who are responsible for operating and maintaining the transportation system;
- o those who must approve the project (e.g. the FHWA, the Corps of Engineers, local officials, regulatory agencies, etc.);

- o those who are responsible for financial and other resources (e.g. the Division of Budget, statewide and regional program managers);
- o those who are the end users of the project (e.g. the traveling public, the local community, businesses); and
- o those to whom interim or finished work is passed next in the project process and who have professional responsibilities for meeting the technical standards (e.g. the project designer, the constructor).

The Project Group designation denotes which of the three general management strategies is to be employed by the project manager in managing a project. The key distinction between the three project groups (A, B, and C) is the number of CSSQ Agreements a project is likely to require (A one, B two and C three). This number is influenced by the production stages a project must follow and the magnitude of resources estimated for completion of these stages. The Regional Planning and Program Manager initially uses the project group designation as a guide in preparing the Initial Project Proposal, and in determining the project manager to assign to the project. (See Chapter III, Section A. for a fuller description of the project groups.)

A Project Management Allowance defines the latitude of delegated authority a project manager has in negotiating proposed project cost, schedule and/or scope changes to a CSSQ Agreement. The details of these allowances are agreed on by the Regional Planning and Program Manager and project manager at the time the CSSQ Agreement is signed. (See Chapter III, Section B.)

Contingency is an element included in the project construction cost estimate by the Department's current cost estimating procedure that accounts for uncertainties in the project items' quantities. The contingency amount recognizes the inexact nature of developing construction cost estimates at early stages in a project. (See Chapter III, Section D.)

Delegation is the granting of authority to a lower level position or individual within a given chain of command. Of course, delegation of authority does not relieve the delegator of responsibility for the results of decisions made by the delegatee. For example, a functional manager may delegate authority to sign a CSSQ Agreement to a job manager within his/her functional area. However, this does not relieve the functional manager of the responsibility for fulfilling the CSSQ Agreement - i.e. providing the resources to produce the job within the cost, scope and schedule detailed in the CSSQ Agreement.

Decide, in the context of project management, means to take one of the following actions:

- o accept, reject, or modify the recommendation, or
- o elevate the decision to a higher authority

A Project Job is an identifiable element of work necessary to produce a major portion of a project. All capital projects can be divided into inclusive jobs. A job may include sub-elements produced by individuals working in several functional specialty areas, such as a Foundation Investigation Report produced by Technical Services. (See Chapter III, Section C.)

Quality Control is an ongoing function performed while producing work products to insure the appropriate standards, policies and procedures are being applied and met. It requires work planning, coordinating, developing, checking, and reviewing. Every employee is individually responsible for controlling the quality of their own work products.

Quality Assurance is an ongoing management function. It involves planning and taking systematic actions that assure work processes and products are actually doing what is intended. This means checking that quality control and assurance functions and work requirements (such as found in policies, procedures, practices, and standards) are reasonable and adequate when applied to specific tasks or jobs. If requirements are found wanting or excessive, they should be changed.

Functional Area is a major technical or administrative specialty unit in the Department, organized and operating at a specific geographic location. For the purposes of capital program and project management, relevant examples of functional areas are as follows:

1. Regions

- Construction
- Design
- Real Estate
- Traffic Engineering and Safety
- Maintenance
- Planning and Program Management

2. Main Office

- Facilities Design
- Structures Design and Construction
- Technical Services
- Real Estate

Construction
Traffic Engineering and Safety
Administration
Highway Maintenance
Waterways Maintenance
Planning
Program and Project Management
Environmental Analysis

Statewide Significance is a project designation indicating special executive management concern. This designation generally will be applied to projects falling into one of the following categories:

- o commitments made by or to the Governor
- o commitments made to the Legislature as part of statewide program negotiations
- o projects of such high cost or uncertain contingencies that cost or schedule changes could grossly affect the Region's program commitments
- o any project where the risk of failing to meet cost, schedule, or scope commitments is unacceptable to the Commissioner.

(See Chapter III, Section E for further explanation and discussion.)

E. Acronyms

Acronyms used in this document include:

ADP - Advance Detail Plans
CSSQ - Cost, Schedule, Scope and Quality
CSSQA - Cost, Schedule, Scope and Quality Agreement
DQAB - Design Quality Assurance Bureau (created by merger of Preliminary Plan and Final Plan Review Bureaus)

EPP - Expanded Project Proposal
FM - Functional Manager
IPP - Initial Project Proposal
JM - Job Manager
NEPA - National Environmental Policy Act
OPPM - Office of Planning and Program Management
PD - Project Developer
PM - Project Manager
PMP - Project Management Plan
PS&E - Plans, Specifications and Estimate
RPPM - Regional Planning and Program Manager
SEQRA - State Environmental Quality Review Act

II. STEPS IN THE PROCEDURE

This chapter shows the stages in managing a capital project under the new Capital Program and Project Management System. Charts showing the general flow of events and products are in Chapter III, Section A. The stages in the project process are:

- A. Initiating the Project
- B. Starting the Project
- C. Scoping the Project
- D. Designing the Project
 - o Preliminary Design
 - o Detailed Design
- E. Letting the Project
- F. Constructing the Project
- G. Reviewing the Results

Each stage is further broken down into steps.

A. Initiating the Project

Participants: Regional Director
Regional Planning and Program Manager
Functional Managers

STEP 1: Selecting the Project. The Region Planning and Program Management Group prepares (or receives from other functional areas) Initial Project Proposals. Based on transportation systems planning and programming requirements, the RPPM Group maintains prioritized lists of candidate capital projects. Each project's expected project management classification (group A, B, or C), and statewide significance is tentatively determined at this

time. (See Chapter III, Sections A and E for discussions of project groups and statewide significance, respectively).

The Regional Planning and Program Manager (RPPM) reviews the lists of Initial Project Proposals and recommends projects to the Regional Director that meet program goals, current instructions from the Office of Planning and Program Management, and available funding. The Regional Director approves, disapproves, or modifies the recommendations.

Products from Step 1:

- o Initial Project Proposals recommended for addition to the region's program for project scoping
- o Regional Director's approval of Initial Project Proposals

STEP 2: Listing the Project on the Program. Listing the project on the program can occur at any time, either during the annual capital program update or at intermediate points. The RPPM assigns a Project Identification Number (PIN) to each project approved by the Regional Director, or batch of similar simple projects. The PIN's digits are selected in coordination with the Office of Planning and Program Management. At this time, the RPPM makes the appropriate changes to the region's program listing, notifies the Office of Planning and Program Management and sends a copy of the Initial Project Proposal to them.

In addition, the RPPM determines from the program schedule and the Initial Project Proposal a preliminary estimate of when the new project needs to be started in the project scoping process. If consultant participation is anticipated the RPPM must particularly consider needed lead times when determining the project start date.

Products from Step 2:

- o Project added to regional capital program listing
- o Project start date estimated
- o Copy of complete Initial Project Proposal sent to OPPM

B. Starting the Project

Participants: Regional Director
Regional Planning and Program Manager
Functional Managers
Project Manager
Project Developer

STEP 1: Assigning the Project Manager. The RPPM, using the information in the Initial Project Proposal, considers the project's scope, complexity, importance, and availability of staff in determining who should be assigned as project manager. Using the project's group designation as a guide, and in consultation with functional managers, the RPPM decides whether managing the project should be done by a project manager from the RPPM Group, whose primary job is project management, or by a project manager from another functional area.

Generally, Group C projects are so complex as to require a project manager from the RPPM Group. Many Group B, and certainly Group A, projects are simple enough that several can be managed simultaneously by one person, or they could be assigned individually to persons who would have also have other duties.

If a project manager is chosen from the staff of the RPPM Group, the RPPM directly assigns the project to this person. If a project manager must be drawn from somewhere

else in the region, the RPPM solicits input from the appropriate functional manager and recommends the project manager to the Regional Director, who makes the assignment.

Product from Step 1:

- o Project manager is assigned

STEP 2: Obligate Funds to Start Project. Concurrent with assigning the project manager, the RPPM notifies the Office of Planning and Program Management to obligate the initial resources necessary to start the project. While the total amount of resources required for the project's scoping stage is estimated on the Initial Project Proposal, up to \$60,000 will be obligated at this point. For some uncomplicated projects, this amount may be sufficient to scope the project, i.e. to bring the project to preliminary design. For the simplest projects, it may be sufficient to bring the project to the detailed design stage.

Product from Step 2:

- o Initial resources obligated to start project

STEP 3: Assigning the Project Developer. The project developer is the person responsible for preparing the project for preliminary design, i.e. scoping the project. This project scoping function culminates with the completion of the Expanded Project Proposal. Each RPPM group will have a specific unit (termed in this manual the project scoping unit) generally assigned the responsibility for preparing Expanded Project Proposals. There may be two exceptions to this rule: 1) for simple projects where expansion of project details beyond those contained in the Initial Project Proposal is not a major effort, the project manager may prepare the Expanded Project Proposal, or 2) in

cases where preliminary design is not required for a project and thus a formal EPP will not be published, the regional Design Group may scope the project.

The RPPM determines who should have the responsibility for preparing the Expanded Project Proposal (or otherwise scope the project) by considering the project's complexity and coordinating with appropriate functional managers. The process of assigning the project developer follows the same steps as identified above for assigning project managers.

Product from Step 3:

- o Project developer is identified and assigned responsibility for project scoping

STEP 4: Project Planning Meeting(s). The RPPM convenes one or more project planning meetings. The initial meeting is attended by the project manager and the project developer, who have been provided copies of the IPP prior to the meeting.

The purpose of the planning meeting(s) is to determine the appropriate management strategy for project production. Management strategy here means the overall plan for identifying and coordinating the resources to produce the project and specifically, how many CSSQ Agreements will be required (depending largely on a confirmation of the project grouping tentatively determined in Step A1).

To do this, agreement must first be reached on what environmental process seems most appropriate for the project, and what document (Design Report, EIS, 3R Report, etc.) will be necessary to obtain design approval for the project. That document will establish the format for the EPP.

The next task is to estimate the resources needed (activities, total staff time, who will be involved) to scope the project. For simpler projects, it will be possible at this initial meeting to reach agreement on the estimate of resources required to scope the project. For more complex projects, additional expertise and input may be required to reach this agreement; in such cases, a second project planning meeting will be convened and attended by the RPPM, PM, PD, and others from functional areas who can provide the needed input. The end result must be agreement on an estimate of resource needs for project scoping. This estimate is then compared to the resources available as obligated in Step B2.

The following outcomes are possible: (See Figure 1)

- The previously obligated resources are sufficient to scope the project and produce the Design Report, EIS, 3R Report or other technical documents needed for design approval. In this case, it is assumed that design phases I through IV are not necessary and the project will need only one CSSQ Agreement to cover the detailed design and construction stage. The next steps will be for the project developer to prepare the design approval document while the project manager prepares the corresponding project management plan (PMP) for detailed design and construction. (This project falls into Group A. See Figure 2 in Chapter III, Section A.)
- The previously obligated resources are sufficient to carry out project scoping but not preliminary design. This case assumes that a formal preliminary design stage (phases I through IV) is necessary. In this case the project will need two CSSQ Agreements; one for preliminary design and another for detailed design and construction. The next steps will be for

PROJECT PRODUCTION PROCESS: MANAGEMENT STRATEGY OPTIONS

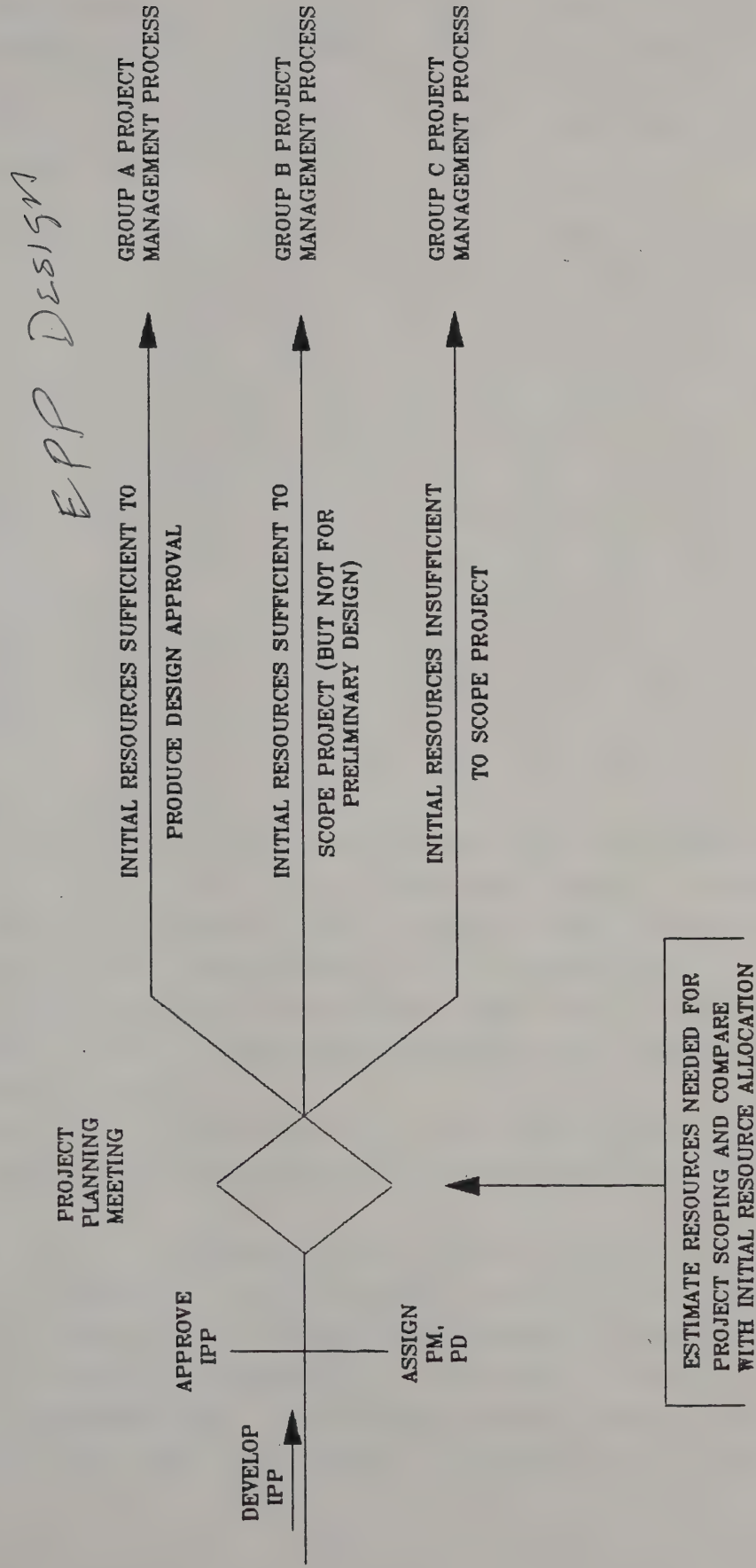


FIGURE 1

the project developer and project manager respectively to prepare the EPP and PMP needed for the CSSQ Agreement covering preliminary design. (This project falls into Group B. See Figure 3 in Chapter III, Section A.)

- The previously obligated resources are insufficient to cover necessary scoping activities. In this case the project will need three CSSQ Agreements; one each for scoping, preliminary design, and detailed design and construction. The next step will be for the project manager to prepare the PMP needed for the CSSQ Agreement covering scoping. As technical input to this PMP, the project manager will use the Initial Project Proposal plus additional project information sufficient to reach agreement on the jobs and responsibilities needed to produce the EPP. (This project falls into Group C. See Figure 4 in Chapter III, Section A.)

Products from Step 4:

- o Agreement on management strategy and objectives for the project including available funding, desired schedule for letting, preliminary scope and special management requirements or instructions (e.g. project group and needed CSSQ Agreements, statewide significance, anticipated environmental processing requirements)
- o Tentative identification of functional areas expected to be involved in the project's next stage

The next steps in managing the project depend on the management strategy, i.e. Project Group A, B, or C, identified above. For clarity, the steps for each Project Group are detailed separately. However, it should be clearly recognized that the Project Group Designation is based on the need to manage resources for project

production and is subject to change. Detail will vary by project type and stage, but the project manager's next task is to prepare the project management plan while working in cooperation with the project developer.

GROUP A PROJECTS

C. Scoping the Project

STEP 1: Drafting the Design Approval Document. Following the project planning meeting, the project developer is performing the work required to prepare the document needed to obtain design approval. This document provides the technical basis for proceeding to detailed design, and provides the Regional Director and the participants in detailed design and construction the following information:

- o a project scope and cost estimate that signatories to the CSSQA for Detailed Design and Construction can accept as a "reasonable approximation" of the scope and cost estimate expected at PS&E, and
- o a sound basis for estimating staff resources needed for detailed design and construction so designers and construction supervisors can set a reasonable schedule for completion of the project.

Product from Step 1:

- o Draft of design approval document

STEP 2: Drafting the Project Management Plan. Following the project planning meeting, the project manager drafts the Project Management Plan to cover the detailed design and construction stage. Close coordination with the project developer is maintained, as the preparation of the design approval document will identify project jobs which

must be provided for in the Project Management Plan. (The project management plan is fully described in Chapter III, Section C.)

Product from Step 2:

- o Draft Project Management Plan for detailed design and construction

STEP 3: Distribute/Review Draft Project Management Plan and Draft Design Approval Document. The project manager sees to it that a copy of the draft design approval document and draft project management plan goes to the RPPM and to all concerned parties. These are parties expected to have a role in the CSSQ Agreement for detailed design and construction, including affected functional/job managers in the region or main office. The functional managers review the draft for adequacy of the cost, schedule, and scope information, and for potential functional involvement in future project scope or design phases. This ensures that appropriate functional input is obtained to produce the project based on the best knowledge and experience available and that a consensus on project scope is obtainable. Also, with the distribution of the draft, the project manager requests functional managers to assign a working contact (potential job manager) for the project if this has not already been done through direct contacts.

Products from Step 3:

- o Review and comments from functional/job managers on the cost, schedule, and scope in preparation for the project CSSQ meeting (if needed)
- o Assignments of functional area contacts

STEP 4: Conduct Project CSSQ Meeting. For Group A projects, there may be no need for a formal CSSQ meeting. However, at the project manager's discretion, a formal meeting may be called. In that case, the project manager convenes the project CSSQ meeting with the project developer, functional/job managers with job responsibilities, and others the project manager believes may be involved in the remaining stage(s) of the project.

The CSSQ meeting is intended to provide all participants with the opportunity to discuss the project, identify and resolve any remaining conflicts over cost, schedule and scope information, and determine and delineate the appropriate jobs needed to complete the next stage of the project. The contacts and discussions with the project manager prior to the meeting should supply all needed information so that the participants can focus on coordination and resolving issues in the meeting.

Products from Step 4:

- o CSSQ is clarified
 - Problem is clearly described
 - Objectives are firmly established
 - Job schedules are estimated
 - Scope is agreed on (to the extent possible)
 - Cost estimates are confirmed
- o Production resource needs are examined/or confirmed, including the need for consultant services
- o Proposed variances from department policies, procedures, or standards are stated
- o Concurrence is reached (or confirmed) on environmental processing; critical path is charted
- o Need for internal and outside agency (e.g. FHWA, COE, DOI, etc.) reviews are determined

STEP 5: Finalize Design Approval Document and Obtain Design Approval. The project developer resolves comments on the design approval document and obtains design approval as required and specified in department procedures appropriate to the project.

Product from Step 5:

- o Design approval

STEP 6: Finalize CSSQ Agreement for Detailed Design and Construction. The project manager prepares the CSSQ Agreement for Detailed Design and Construction by assembling the design approval document, the Project Management Plan and the CSSQ Agreement signature sheet. The project manager then distributes the CSSQ Agreement to all parties expected to sign it. It is expected that any outstanding issues will be resolved at the project CSSQ meeting(s). However, if there are any remaining disagreements or changes, they must be negotiated through the project manager/RPPM until all parties sign the agreement.

Product from Step 6:

- o Executed CSSQ Agreement for Detailed Design and Construction

STEP 7: Authorize Detailed Design. (Note: while this is technically not the project manager's responsibility, the project manager should be aware that this step needs to be taken before design phase V can begin.) After confirming that the project is consistent with the region's program, signing the CSSQ Agreement for Detailed Design and Construction, and noting that design approval has been obtained, the RPPM recommends that the Regional Director authorize commencement of detailed design. Upon receiving

the Regional Director's authorization, the RPPM makes the necessary arrangements with the Office of Planning and Program Management to ensure the funds needed for detailed design are obligated and notifies the project manager and functional managers to start the detailed design work. (See Chapter I, Section C for discussion of PM responsibilities.)

Product from Step 7:

- o Authorization of Detailed Design, including obligation of funds

Steps for Group A projects continue with Section D, Designing the Project, Step 7, page 53.

GROUP B PROJECTS

C. Scoping the Project

STEP 1: Drafting the Expanded Project Proposal. This step is carried out by the project developer. For complex Group B projects, the project developer will be assigned from the RPPM Group. For remaining Group B projects, this step can be provided by any appropriate functional area. In any case, the project developer must involve the other functional areas in preparing this document. The project manager maintains close contact with the project developer throughout this step.

The EPP is the end product of the scoping stage. The EPP is prepared by the project developer who refines and expands the cost, schedule, and scope information contained in the "Initial Project Proposal". From its earliest draft, the EPP follow the format of the document needed to obtain design approval. It will evolve into, but it is not as complete as the report prepared in phase I of

preliminary design. The EPP becomes a part of the CSSQ Agreement for Preliminary Design. There are two primary purposes of the EPP:

1. Present a scope and cost estimate that signatories to the CSSQA for Preliminary Design can accept as 1) a "reasonable approximation" of the scope expected at design approval, and 2) the most accurate cost estimate possible based on available information.
2. Enable the CSSQA signatories to supply the project manager with a good estimate of staff resources needed for preliminary design, with a schedule the designer believes is realistic.

Product from Step 1:

- o Draft of Expanded Project Proposal

STEP 2: Drafting the Project Management Plan. Following the project planning meeting, the project manager drafts the Project Management Plan to cover the preliminary design stage. Close coordination with the project developer is maintained, as the preparation of the expanded project proposal will identify project jobs which must be provided for in the Project Management Plan. The Project Management Plan must include an estimate of the cost (resources) needed to accomplish the preliminary design work. (The Project Management Plan is fully described in Chapter III, Section C.)

Product from Step 2:

- o Draft Project Management Plan for preliminary design

STEP 3: Distribute/Review Draft Project Management Plan and Draft Expanded Project Proposal. The project manager sees to it that drafts of the Project Management Plan and EPP go to the RPPM and to all concerned parties. These are parties expected to have a role in the activities covered by the project's next CSSQ Agreement, including affected or interested functional/job managers in the region or main office. The functional managers review the draft for adequacy of the cost, schedule, and scope information, and for potential functional involvement in future project scope or design phases. This ensures that appropriate functional input is obtained to produce the project based on the best knowledge and experience available, and that a consensus on project scope is obtainable. Also, with the distribution of the draft, the project manager requests functional managers to assign a working contact (potential job manager) for the project, providing any special instructions.

Products from Step 3:

- o Review and comments from functional/job managers on the cost, schedule, and scope in preparation for the project CSSQ meeting
- o Assignments of functional area contacts

STEP 4: Conduct Project CSSQ Meeting. The project manager convenes the project CSSQ meeting. For some projects, there may be no need for a formal CSSQ meeting. However, at the project manager's discretion, a formal meeting may be called. In that case, the project manager convenes the project CSSQ meeting with the project developer, functional/job managers with job responsibilities, and others the project manager believes may be involved in the remaining stage(s) of the project.

The CSSQ meeting is intended to provide all participants with the opportunity to discuss the project, identify and resolve any remaining conflicts over cost, schedule and scope information, and determine and delineate the appropriate jobs needed to complete the next stage of the project. The contacts and discussions with the project manager prior to the meeting should supply all needed information so that the participants can focus on coordination and resolving issues in the meeting.

Products from Step 4:

- o CSSQ is clarified
 - Problem is clearly described
 - Objectives are firmly established
 - Job schedules are estimated
 - Scope is agreed on (to the extent possible)
 - Cost estimates are confirmed
- o Production resource needs are examined/or confirmed, including the need for consultant services
- o Proposed variances from department policies, procedures, or standards are stated
- o Concurrence is reached (or confirmed) on environmental processing; critical path is charted
- o Need for internal and outside agency (e.g. FHWA, COE, DOI, etc.) reviews are determined

STEP 5: Approval of the Expanded Project Proposal. Based on the results of the reviews and project CSSQ meeting, the project developer finalizes the Expanded Project Proposal (EPP). The project developer then provides the EPP to the project manager, who reviews it for consistency with the Project Management Plan and then provides it to the RPPM. The RPPM obtains the Regional Director's approval of the EPP.

Product from Step 5:

- o Regional Director approval of EPP

STEP 6: Finalize CSSQ Agreement for Preliminary Design.

Based on the approved Expanded Project Proposal, the project manager makes any necessary revisions to the Project Management Plan. Then the project manager prepares the CSSQ Agreement for Preliminary Design by assembling the EPP, the Project Management Plan and the CSSQ Agreement signature sheet. The project manager distributes the CSSQA to all parties expected to sign it. It is expected that any outstanding issues will be resolved at the project CSSQ meeting. However, if there are any remaining disagreements or changes, they must be negotiated through the project manager/RPPM until all parties sign the agreement.

Product from Step 6:

- o Executed CSSQ Agreement for Preliminary Design

STEP 7: Authorize Preliminary Design. (This step is directly analogous to step C7 for "Group A Projects".)

Product from Step 7:

- o Authorization of Preliminary Design

The next steps for a Group B project continue with Section D. Designing the Project, Step 1, page 50.

GROUP C PROJECTS (Starting the Project, cont'd.)

STEP 5: Drafting the Project Management Plan for Scoping.

Following the project planning meeting, the project manager works closely with the project developer to identify and develop a schedule for the work necessary to scope the

project and draft the Project Management Plan for the scoping stage. This includes preparing an estimate of the cost (resources) needed to accomplish the scoping work, thus identifying what funding additional to the initially obligated amount is required. (The project management plan is fully described in Chapter III, Section C.)

At the same time, the project developer is performing analyses and coordinating with functional areas as necessary, based on the Initial Project Proposal, to determine what work is required to scope the project. Any additional project information is appended to the Initial Project Proposal.

Products from Step 5:

- o Draft Project Management Plan for scoping
- o Initial Project Proposal supplemented as appropriate

STEP 6: Finalize CSSQ Agreement for Scoping. The project manager prepares the CSSQ Agreement for scoping by assembling the Project Management Plan, the Initial Project Proposal as supplemented, and the CSSQ Agreement signature sheet. The project manager then distributes this draft agreement to all parties expected to sign it. Any disagreements or changes must be negotiated through the project manager/RPPM until all parties sign the agreement.

Product from Step 6:

- o Executed CSSQ Agreement for Scoping

Step 7: Authorize Scoping. (Note: While this is not technically the project manager's responsibility, the project manager should be aware that this step needs to be taken before scoping can begin). After confirming the project is consistent with the region's program and signing

the CSSQ agreement, the RPPM recommends that the Regional Director authorize the commencement of scoping. Upon receiving the Regional Director's authorization, the RPPM makes the necessary arrangements with the Office of Planning and Program Management to have the funds needed for scoping obligated, and notifies the project manager and functional managers to start the scoping work. (See Chapter I, Section C for discussion of PM responsibilities.)

Product from Step 7:

- o Authorization of scoping, including obligation of funds

C. Scoping the Project (Group C Projects)

STEP 1: Drafting the Expanded Project Proposal: The project developer prepares the Expanded Project Proposal in accordance with the CSSQ Agreement for Scoping. The project developer maintains close contact with the project manager and works with the project manager on any needed changes to the CSSQ Agreement.

The EPP is the end product of the scoping stage. The EPP is prepared by the project developer who refines and expands the cost, schedule, and scope information contained in the "Initial Project Proposal". From its earliest draft, the EPP follow the format of the document needed to obtain design approval. It will evolve into, but it is not as complete as the report prepared in phase I of preliminary design. The EPP becomes a part of the CSSQ Agreement for Preliminary Design. There are two primary purposes of the EPP:

1. Present a scope and cost estimate that signatories to the CSSQA for Preliminary Design can accept as 1) a "reasonable approximation" of the scope expected at design approval, and 2) the most accurate cost estimate possible based on available information.
2. Enable the CSSQA signatories to supply the project manager with a good estimate of staff resources needed for preliminary design, with a schedule the designer believes is realistic.

Product from Step 1:

- o Draft of Expanded Project Proposal

STEP 2: Drafting the Project Management Plan. Through the scoping stage the scoping work is progressed in accord with the CSSQ Agreement for Scoping. The project manager monitors the work, and prepares the Project Management Plan for the next stage of project production, preliminary design. Close coordination with the project developer is maintained, as the preparation of the Expanded Project Proposal will identify project jobs which must be provided for in the Project Management Plan. The Project Management Plan must include an estimate of the cost (resources) needed to accomplish the preliminary design stage. (The Project Management Plan is fully described in Chapter III, Section C.)

Product from Step 2:

- o Draft Project Management Plan for Preliminary Design

STEP 3: Distribute/Review Draft Project Management Plan and Draft Expanded Project Proposal. (Please refer to step C3 for "Group B Projects", page 44.)

STEP 4: Conduct Project CSSQ Meeting. (Please refer to step C4 for "Group B Projects", page 44.)

STEP 5: Approval of Expanded Project Proposal. (Please refer to step C5 for "Group B Projects," page 45.)

STEP 6: Finalize CSSQ Agreement for Preliminary Design. (Please refer to step C6 for "Group B Projects", page 46.)

STEP 7: Authorize Preliminary Design. (Please refer to step C7 for "Group A Projects", page 41.)

The next steps for a Group C project continue with Section D, Designing the Project, Step 1, which follows.

D. Designing the Project

Note: The following steps 1 through 6 are followed for projects in Groups B and C. Step 7 is followed for all projects. This section should be read in conjunction with the Facilities Design Division Design Procedure Manual.

Participants: Project Manager
Functional Managers
Job Managers
Providers of Design Support Services
Outside Agencies

o PRELIMINARY DESIGN

STEP 1: Drafting the Design Approval Document. This stage is carried out consistent with current policy, procedures, and standards, including the necessary technical reviews leading to design approval. This is done in compliance with the CSSQ Agreement for Preliminary Design. Group B

and C projects will require some or all of Design Phases I-IV in this stage, while Group A projects will not. The project manager monitors the work and checks progress at key milestones identified in the CSSQ Agreement for Preliminary Design, such as production of the Design Report, Environmental Assessment, or Draft Environmental Impact Statement, and completion of Phases I, II, III, and IV, as required for the project. Any changes proposed to the CSSQ Agreement are raised with the project manager for resolution.

Product from Step 1:

- o Design Approval Document produced in accordance with CSSQA, e.g. Design Report, Bridge Rehabilitation Project Reports, Environmental Impact Statement

STEP 2: Drafting the Project Management Plan. As the preliminary design work is progressed in accordance with the CSSQ Agreement for Preliminary Design, the project manager drafts the Project Management Plan to cover the detailed design and construction stages of the project. The project manager must work with functional/job managers to identify the jobs needed to produce the project through detailed design and construction, and use their input to develop an estimate of the funding (resources) needed. The project manager must ensure that the schedule provides for, and responsibility is assigned for, monitoring all needed reviews and processing activities. (The Project Management Plan is fully described in Chapter III, Section C.)

Product from Step 2:

- o Draft Project Management Plan for Detailed Design and Construction

STEP 3: Distribute/Review Draft Project Management Plan and Design Approval Document. The project manager sees to it that a copy of the draft Project Management Plan and design approval document goes to the RPPM and to all concerned parties. These are parties expected to have a role in the CSSQ Agreement for Detailed Design and Construction, including affected functional/job managers in the region or main office. The functional managers review is in preparation for signing the CSSQ Agreement for Detailed Design and Construction.

Product from Step 3:

- o Review and comments from functional/job managers on the cost, schedule, and scope in preparation for the CSSQ Agreement for Detailed Design and Construction

STEP 4: Finalize Design Approval Document and Obtain Design Approval. The designer (JM) works with the project manager to account for comments resulting from review in step 3 and finalizes the design approval document. The designer then obtains design approval as required and specified in department procedures appropriate to the project.

Product from Step 4:

- o Design Approval

STEP 5: Finalize CSSQ Agreement for Detailed Design and Construction. (Please refer to step C6 for "Group A projects on page 41.)

STEP 6: Authorize Detailed Design. (Note: while this is technically not the project manager's responsibility, the project manager should be aware that this step needs to be taken before design phase V can begin.) After confirming

that the project is consistent with the region's program, signing the CSSQ Agreement for Detailed Design and Construction, and noting that design approval has been obtained, the RPPM recommends that the Regional Director authorize commencement of detailed design. Upon receiving the Regional Director's authorization, the RPPM makes the necessary arrangements with the Office of Planning and Program Management to have the funds needed for detailed design obligated and notifies the project manager and functional managers to start the detailed design work. (See Chapter I, Section C for discussion of PM responsibilities.)

Product from Step 6:

- o Authorization of Detailed Design, including obligation of funds

o DETAILED DESIGN

STEP 7: Detailed Design. FM/JMs prepare the Advance Detail Plans (ADP) and the Plans, Specifications and Estimates (PS&E) through an assemblage of several project jobs. This consolidation is consistent with current design policy, procedures, and standards and in conformance with the CSSQ Agreement for Detailed Design and Construction.

The designer (JM) is responsible for securing the necessary reviews of the ADP and PS&E, as accounted for in the CSSQA.

The PM's role is to monitor the project as described in Chapter I, Section C. This role is a management activity rather than a technical production activity. The PM must check and ensure that schedules are met, all necessary reviews occur, and any disputes are resolved or elevated in a timely manner.

When the functional/job managers prepare the PS&E package, the responsible functional manager (as identified in the CSSQA) drafts the PS&E transmittal memo in accordance with the current Engineering Instruction. The project manager uses the draft transmittal memo as a checklist to ensure that the PS&E package is complete and consistent with the CSSQA; the PM is responsible for assuring the RPPM that the project is in conformance with the CSSQA and thus the program. There may be several project-functional manager contacts required to ensure all elements of the PS&E are included and complete and to finalize the transmittal memo. When satisfied, the project manager, via the RPPM, recommends approval of the PS&E to the Regional Director. The Regional Director signs the final transmittal memo, and the functional manager (design) submits the PS&E package to the Design Quality Assurance Bureau.

Completion of the PS&E package denotes the functional area's assurance that the technical aspects of the PS&E are consistent with applicable technical policies and procedures. The RPPM's recommendation denotes administrative approval of the project, i.e. it is consistent with the program. The Regional Director's signature of the transmittal memo constitutes both approval of the PS&E and the decision to proceed to contract advertisement and letting.

The RPPM receives a copy of the PS&E transmittal memo, a check point/reminder to obtain the necessary obligation of construction funds.

Products from Step 7:

- o Final quality checks and adjustments
- o Completed project design
- o Approval of PS&E and transmission to Design Quality Assurance Bureau
- o Obligation of construction funds

E. Letting the Project

Participants: Design Quality Assurance Bureau
Contract Management Bureau
Construction Division
Project Manager
Office of Planning and Program Management
Functional Managers
Job Managers
Equal Opportunity Development and Compliance

STEP 1: Assembling Contract for Letting. Assembling all project elements necessary to advertise the project for letting is carried out consistent with current practice by the Design Quality Assurance Bureau, Office of Planning and Program Management, Office of Equal Opportunity Development and Compliance, and Contract Management Bureau. The project manager closely monitors this activity and obtains functional area assistance when necessary. The project manager can accomplish this either directly or through a design job manager by including it in the PMP in the CSSQA. In the event of a proposed change or amendment, the project manager reviews it for conformance with the CSSQ Agreement, and resolves any CSSQ Agreement changes as necessary. The RPPM is responsible for working with the Office of Planning and Program Management to coordinate the timing of the project in the letting schedule.

Step 1: Product.

- o The project is let consistent with the CSSQ Agreement.

STEP 2: Analyzing Bids and Awarding Contract. Bids are received and analyzed consistent with Construction Division, OPPM, OEODC and Contract Management Bureau

procedures (Case II analysis, for example). The project manager participates in the analysis process by assisting the Construction Division in reviewing bids and assessing impacts. The project manager discusses the program implications with the RPPM and the RPPM conveys those concerns to the Regional Director. Thereafter, the contract is awarded by Contract Management Bureau, and the RPPM makes the necessary adjustments to the program and the CSSQ Agreements.

Product from Step 2:

- o Awarded construction contract

F. Constructing the Project

Participants: Project Manager
Regional Construction Engineer
Construction Supervisor
Engineer in Charge (Job Manager)
Contractor

STEP 1: Pre-Construction Meeting. Prior to the pre-construction meeting, the PM, the EIC, and the Construction Supervisor meet to discuss the project, review their respective roles, and reach an understanding of their working relationship through the construction stage. The PM's role includes support to the EIC (construction job manager) by acting as a source of project background information, a communication link to those who had input to the project's design, and as a monitor for all proposed orders on contract.

The Regional Construction Engineer chairs the pre-construction meeting. Attendees will include the project manager, the contractor, and may include utilities, railroads, municipality representatives, and others as

appropriate (e.g. the Regional Environmental contact for special comment on environmental commitments). As needed, the project manager presents requested information about the project's history and management concerns.

Products from Step 1:

- o Project manager-EIC/Construction Supervisor working relationship established
- o Order-on-contract process and any special management concerns and objectives agreed to by project manager and EIC

STEP 2: Construction Support. The PM provides support to the EIC as discussed above in Step 1, and participates in project meetings between Construction and Design (i.e. mid-construction meeting required by EI 89-31). The EIC/Construction Supervisor provides the project manager with information copies of proposed orders on contract. The project manager must notify the RPPM of any orders on contract that potentially involve CSSQ Agreement changes.

The RPPM, the Construction Supervisor and others as appropriate advise the Regional Director on the proposed order on contract. The Regional Director makes the appropriate recommendation and forwards it to Main Office Construction Division for disposition consistent with current regulation. Based on the Department's decision on the order-on-contract, the RPPM makes any necessary CSSQ Agreement changes and capital program adjustments.

Product from Step 2:

- o Construction is completed within the approved or amended CSSQ Agreement

G. Reviewing the Results

Participants: Project Manager
Engineer-in-Charge
All Involved Project Functional/Job Managers

STEP 1: Post Construction Review. For all Group B and C projects, and for Group A projects as selected by the RPPM, the project manager evaluates the project outcome and produces a post-construction review report. The project manager is responsible for preparing the final report and providing it to CSSQ Agreement signers, and other main-office and region functional groups as appropriate. The report includes four main areas of performance:

1. Comparison of completed project to all CSSQ Agreements (as amended) and the IPP, including any follow up actions needed to fulfill commitments or promises made to the community or others.
2. Comparison of actual delivery by functional areas versus delivery committed in CSSQ Agreement(s) (as amended).
3. Review of policies and procedures governing the project management process and project production relative to any special problems or areas needing improvement.
4. Review of plans to provide technical feedback to designers on constructability (to be prepared by Construction Division)

This report is important as it helps identify the need to continuously improve policies, procedures, and standards. It also serves to build a knowledge base relative to the actual duration and resource requirements for project activities and tasks for use in preparing better estimates in the future.

This post-construction review report may be in the form of a memo addressing the above points.

Product from Step 1:

- o Post-construction review report.

STEP 2: Review Follow-Up Actions. After distributing the review report, the project manager assembles any responses to or comments received on the report and discusses them with the RPPM. The RPPM must then consider any suggested changes to policies, procedures, any identified production problems, and discuss them as appropriate with affected functional managers. This also includes any follow-up actions, such as maintenance obligations, future evaluations of special or experimental features, etc. Functional/job managers will consider any recommended changes to technical specifications, policies, or procedures. Agreed on changes should then be documented in the final review report, along with recommendations from the RPPM for changes that may not have been agreed to. The final review report is transmitted by the RPPM to the Regional Director and OPPM. The Regional Director takes action or recommends action to the main office, as appropriate. The project manager's final actions on the project are to make sure the project files are complete and orderly, and properly stored in the RPPM Group's files or other location as per the RPPM's direction.

Products from Step 2:

- o Necessary improvement or changes in the system resulting from feedback from the review report
- o Project files completed and stored

III. KEY CONCEPTS AND DOCUMENTS

This chapter consists of five sections providing explanatory information on some key concepts and required documents of the new program and project management system:

- A. PPM Project Process
- B. CSSQ Agreements and Changes to Them
- C. The Project Management Plan
- D. Project Cost Estimates
- E. Managing Projects of Statewide Significance

A. PPM Project Process

This section discusses selected key features of the new program and project management (PPM) system, and diagrams the PPM project process using "project event" charts. These diagrams are presented later in this section.

1. Project Groups

The Project Group designation denotes the intended management strategy to be employed by the project manager in managing a project. This grouping is used only to identify the project's management strategy, i.e. how many CSSQ Agreements are needed. The groups are as follows:

- o **Group A** Projects are relatively routine with single purpose scopes. These projects are usually 100 percent state-funded and characterized environmentally as SEQR Type II actions. However, some may be federally funded, and in that case would be characterized as NEPA Class II projects. In any case, design phases I through IV are not required and only a single CSSQ Agreement for detailed design and construction is needed.

Typically Group A includes projects such as bridge painting, minor bridge rehabilitations, shoulder resurfacing, and sign and signal replacement projects. Some Group A projects lend themselves to batch processing.

- o Group B projects range from small-scale projects such as bridge replacements on existing alignment with no associated environmental impacts, to projects that are moderately complex, potentially controversial, or have the potential for social, economic or environmental impacts requiring detailed analysis. The simpler projects would be considered NEPA Class II, SEQR Type II. Moderately complex projects would be considered either NEPA Class I, SEQR non-Type II, or NEPA Class III, SEQR non-Type II.

These projects range from small projects requiring only design phases I and IV to larger projects requiring design phases I, II, III and IV.

Typical examples of Group B projects include highway reconstruction, some capacity improvements, and bridge replacement projects.

- o Group C projects are large, complex, and usually controversial. They typically require location planning studies and/or extensive environmental analysis. They may also require the preparation of Environmental Impact Statements and would be characterized as NEPA Class I or SEQR non-Type-II. Group C projects require all design phases (I through VI).

Group C projects would include such current projects as the Gowanus Expressway, the LIE Capacity Improvement Study, the Corning Bypass, and the Cross-Westchester Expressway.

2. New Project Documents/Reports

Project Notification Forms, Project Initiation Requests, and Pre-PIRs will no longer be used under the new system. Two new types of documents called "project proposals" will be used for project programming and scoping purposes.

The Initial Project Proposal (IPP) is used for programming purposes. For most projects, the IPP is a two page "thumbnail sketch." The IPP for the most complex projects may be supported by more detailed documents since prior investigations and studies at the systems level usually will have been completed. The IPP should incorporate all such available information.

The IPP provides project related operational, physical, and program information for the Regional Planning and Program Manager's use in updating the region's capital program.

The RPPM evaluates, prioritizes, and selects IPP's for recommendation to the Regional Director for approval. The Regional Director's approval of the IPP places the project on the region's capital program.

A sample IPP form is shown at the end of this discussion. Following are general guidelines for completing this form and further clarification for two of the form's sections:

- o **Schedule and Cost Estimates:** Cost and schedule information provided should be for the alternative most reasonably expected to be implemented. The "Total Cost" represents all project costs including preliminary engineering, ROW, and construction. The "Basis of Estimate" area should describe the assumptions and elements upon which the included project cost and schedule inputs are based. The "Schedule Qualifiers" area should note all elements which may impact the project schedule. For example, the need for a consultant and thus the time required to hire a consultant, should be noted here and reflected in the project schedule and cost summaries. Please refer to Section D of this Chapter for further guidance on project cost estimates.
- o **Special Technical Activities Required:** These are activities that need early or special attention. Generally they involve specialized production efforts, require a resource (staff or equipment) not readily available, or need to be done early in the process. Examples are extensive soil borings, seismic surveys, cultural resource surveys and special mapping. Typically, special technical activities may involve main office functional areas.

The **Expanded Project Proposal (EPP)** refines and expands on the project cost, schedule, scope and other information contained in the IPP. The draft of the EPP serves as the discussion document for the project CSSQ meeting. The EPP becomes a formal part of the CSSQ Agreement for Preliminary Design when one is needed. The format and other details of the EPP are described in Chapter I, Section D.

INITIAL PROJECT PROPOSAL
(Fill in applicable items with best available
information or indicate as unknown)

PROJECT NAME _____

ROUTE/FEATURE _____ LIMITS _____

COUNTY _____ MUNICIPALITY _____

EXISTING CHARACTERISTICS OF CONCERN (Give relevant geometric,
facility condition, operational and travel service elements. List
by element and appropriate measures):

ELEMENT	MEASURE(S)/INDICATOR(S)
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

DESCRIBE THE PROBLEM AND PRELIMINARY PROJECT OBJECTIVES: _____

PROJECT ELEMENT(S) TO BE INVESTIGATED:

<input type="checkbox"/> Deck/Minor Br Rehab	<input type="checkbox"/> Bridge Replace., New Location
<input type="checkbox"/> Major Bridge Rehab	<input type="checkbox"/> Bridge Replace., Existing Loc.
<input type="checkbox"/> Highway Resurface	<input type="checkbox"/> Highway Reconstruction
<input type="checkbox"/> Appurtenances	_____
<input type="checkbox"/> Traffic Control	_____
<input type="checkbox"/> Other	_____

GOM TYPE: ☐ Pavement ☐ Bridge ☐ Safety
 ☐ Capacity ☐ Appurtenance ☐ Misc.

GOM CONTRIBUTION (QUANTITY): _____

ENVIRONMENTAL CLASSIFICATION (if known):

EAP RECOMMENDATION: ☐ Class I ☐ Class II ☐ Class III
 ☐ TBD

SEQR RECOMMENDATION: ☐ Type II ☐ Non-Type II ☐ TBD

MPO INVOLVEMENT ☐ No ☐ Yes; if (Y), TIP No. _____

9/3/91

NOTES ON SPECIAL CIRCUMSTANCES (public sensitivity, wetlands, political commitment, relationship to other projects, etc)

SPECIAL TECHNICAL ACTIVITIES REQUIRED:

SCHEDULE AND COST:

DESIRED LETTING DATE

SCHEDULE QUALIFIERS: ☐ Public Hearing ☐ 4(f)/106

☐ Major Permits (Specify)

☐ Needs Consultant(s) for

☐ None ☐ Other

	ACTIVITY DURATION	ESTIMATED COST	FUND SOURCE	OBLIGATION DATE
SCOPING				
DESIGN				
ROW				
CONST.				
OTHER				
TOTAL				

BASIS OF ESTIMATE:

(RPPM OFFICE COMPLETES
INFORMATION BELOW
DOUBLE LINE)

IPP PREPARER

OFFICE

DATE

PROGRAM DISPOSITION:

ANTICIPATED PROJECT MANAGEMENT GROUP ☐ A ☐ B ☐ C

STATEWIDE SIGNIFICANCE ☐ No ☐ Yes REMARKS:

RPPM RECOMMENDATION DATE

(Signature)

ASSIGNED PIN LETTING DATE

REGIONAL DIRECTOR APPROVAL DATE

(Signature)

9/3/91

3. Design Process

The 1979 Draft Design Procedure Manual and the 1991 update now being prepared identify six project design phases. The PPM system does not change them, and they are as follows:

- Design Phase I - Development of Design Alternatives,
Identification and Assessment of
Impacts
- Design Phase II - Advisory Agency Review
- Design Phase III - Public Hearing/Information Meeting
- Design Phase IV - Final Evaluation and Recommendation
- Design Phase V - Advance Detail Plans
- Design Phase VI - Final Plans, Specifications, and
Estimates

As described in the Draft Design Procedure Manual, these phases do not apply to all projects due to differences in project scope and complexity.

In addition, the Draft Design Procedure Manual identifies and describes the project reports and/or design reports required for reviews and approvals beginning at Design Phase I. These reports will not be changed by the new system.

Refer to the table "Comparison of Key Project Documents" on the following page for a list of old and new process documents.

COMPARISON OF KEY PROJECT DOCUMENTS
(Listed in order of preparation by project group)

PREVIOUS PROCESS

PPM PROCESS

Group A

Pre-PIR

Initial Project Proposal

Project Notification Form
Design Report or
3R Report

Design Report or
3R Report

Group B

Pre-PIR

Initial Project Proposal

Project Initiation Request/
Project Notification Form

Expanded Project Proposal

Design Report, or
Design Report/Environ.
Assessment, or
Design Report/Draft Environ.
Impact Statements

Design Report, or
Design Report/Environ.
Assessment, or
Design Report/Draft
Environ. Impact Statement

Final Design Report, or
Final Design Report/Environ.
Assessment, or
Final Design Report/Final
Environ. Impact Statement

Final Design Report, or
Final Design Report/
Environ. Assessment, or
Final Design Report/Final
Environ. Impact Statement

Group C

Project Initiation Request
Project Report III

Initial Project Proposal

Expanded Project Proposal

PR IV/Draft Environ. Impact
Statement, or
Design Report/Environmental
Assessment

PR IV/Draft Environ.
Impact Statement, or
Design Report/
Environmental Assessment

PR V/Final Environ. Impact
Statement, or
Final Design Report/Environ.
Assessment

PR V/Final Environ. Impact
Statement, or
Final Design Report/
Environ. Assessment

MANAGEMENT PROCESS FOR GROUP A PROJECTS

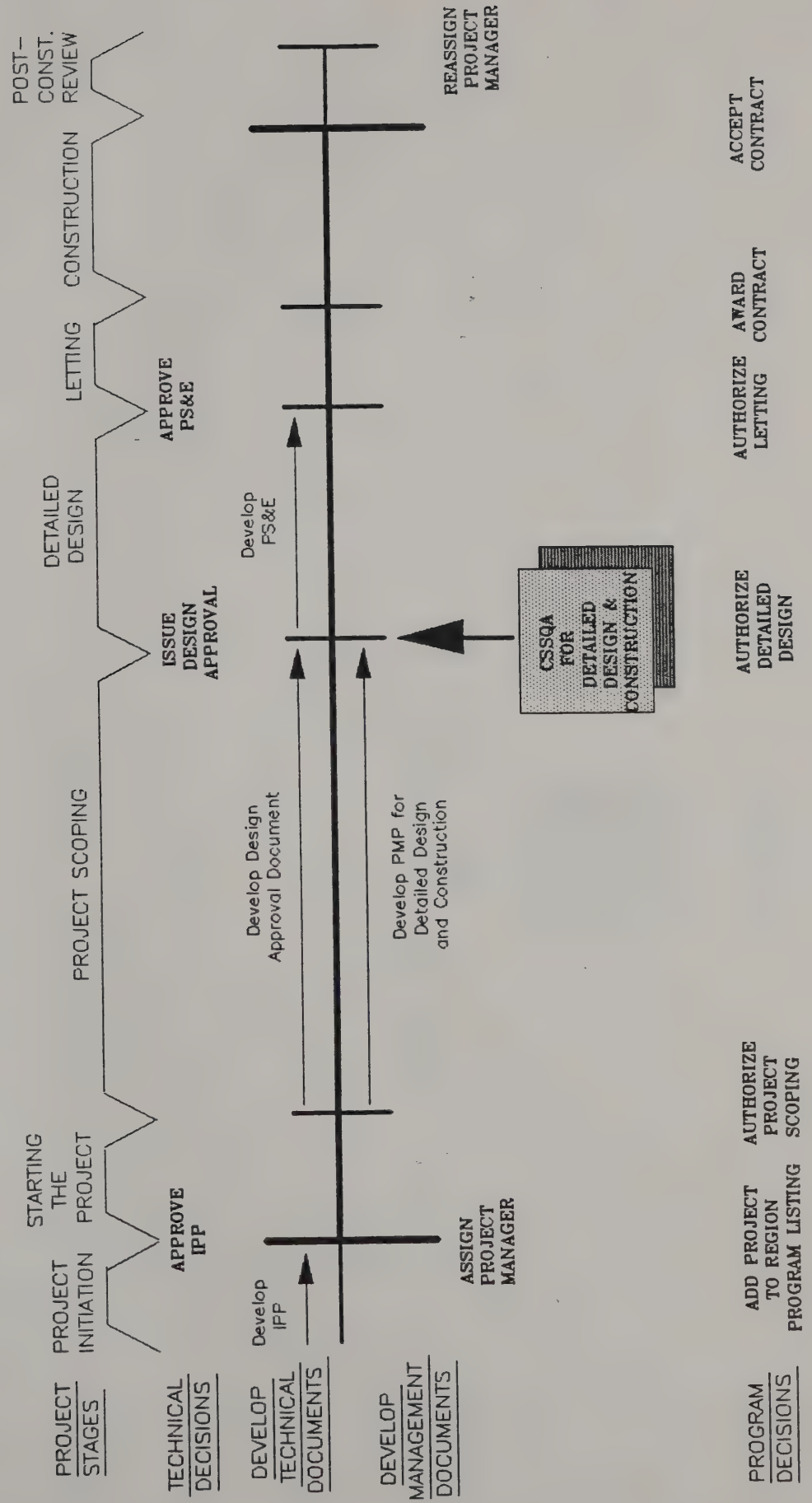


FIGURE 2

MANAGEMENT PROCESS FOR GROUP B PROJECTS

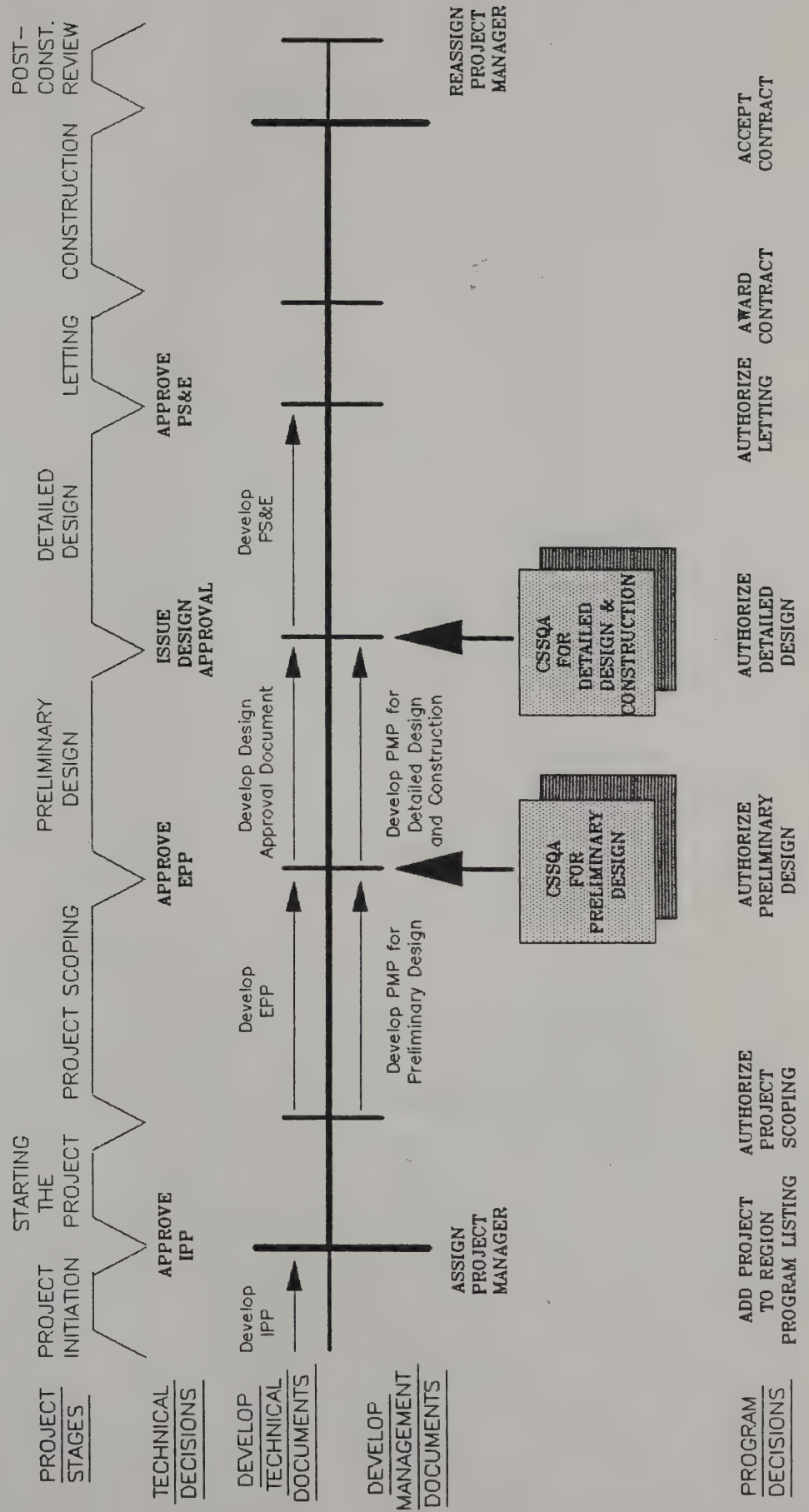


FIGURE 3

MANAGEMENT PROCESS FOR GROUP C PROJECTS

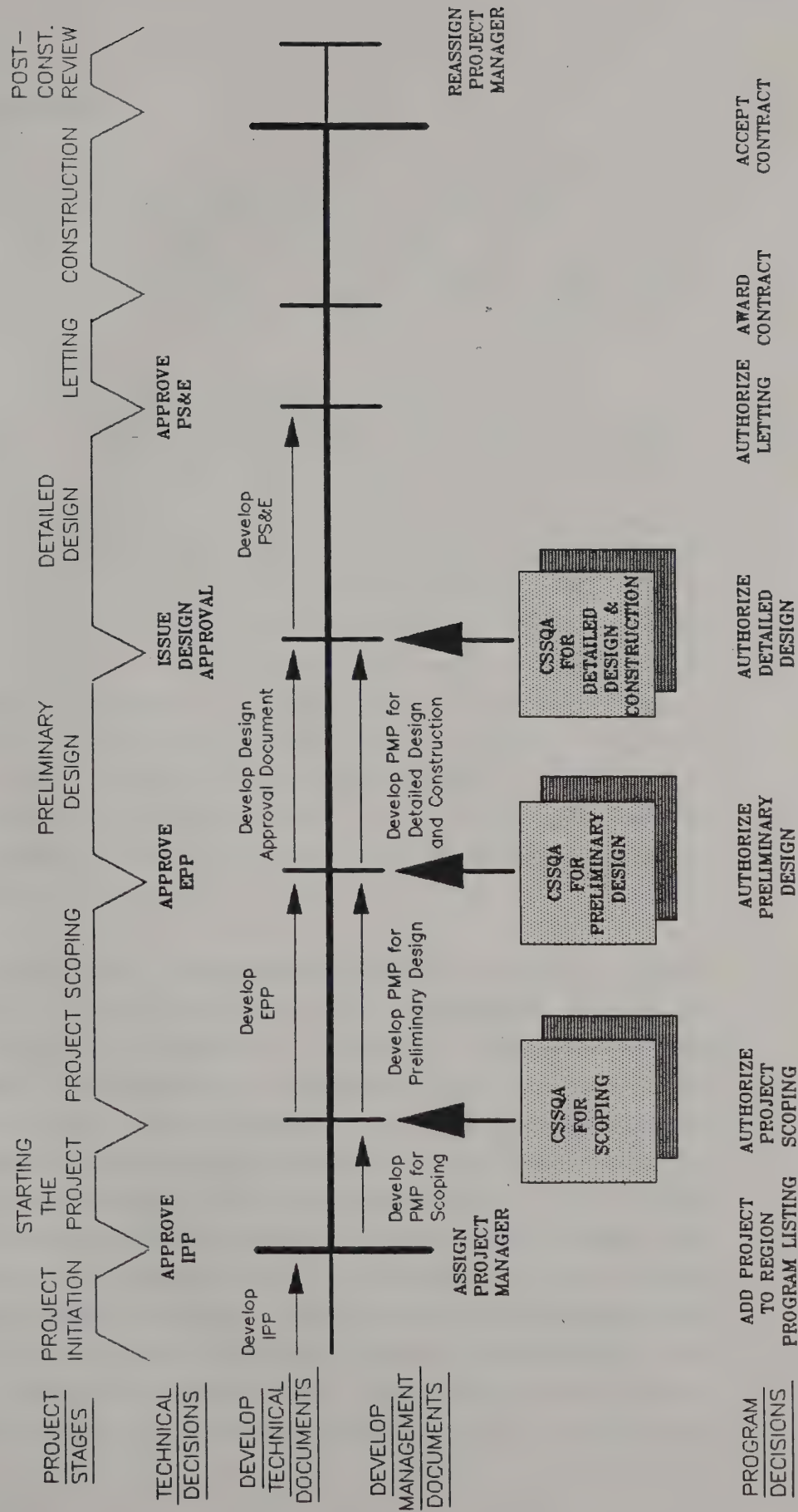


FIGURE 4

4. Formal Meetings

Under the new system, project management through improved early communications is emphasized. This is accomplished, in part, by the use of two formal meetings: the project planning meeting and the project CSSQ meeting.

The Project Planning Meeting's purpose is to reach agreement on the management strategy for controlling the resources to produce the project. Included in this is agreement on the format, effort, detail and schedule for completing the EPP, and agreement on the number of CSSQ Agreements needed. The RPPM discusses the IPP to provide an understanding of the project's place in the region's program. This leads to a mutual understanding regarding preliminary transportation and management objectives, including available funding, desired schedule for letting, preliminary scope and special requirements or instructions. A detailed description of the meeting and its products is included in Chapter II, Section B, Step 4.

The Project CSSQ Meeting's purpose is to reach agreement on how the project's subsequent production stage is to be advanced. This is accomplished by discussing and reaching agreement on the two main elements of the CSSQ Agreement - the Project Management Plan, and the appropriate project technical report - for the next stage of project production. Drafts of the PMP and appropriate project report are provided to participants in advance of the meeting. The project report provides the basis for discussing the technical scope of the project, and the Project Management Plan is the basis for discussing functional area roles, responsibilities, resource needs and production

schedule. A description of the project CSSQ meetings and their products is provided in Chapter II, Section C, Step 4 (Group B projects).

Other meetings may be called by the project manager on an as needed basis to clarify issues; to negotiate cost, schedule, and scope changes; or for other appropriate reasons.

B. CSSQ Agreements and Changes to Them

The CSSQ Agreement consists of three parts: 1) a signature sheet, 2) a Project Management Plan, and 3) the project report appropriate to the project type and stage. The Agreement is an explicit expression of mutual expectations by the NYSDOT managers responsible for producing the specified elements of the project. The CSSQ Agreement is a structured, consistent format for managing the resources to produce a project. It also serves as a communication device and provides the mechanism for changes in projects and the program.

The project manager is responsible for preparing and negotiating the CSSQ Agreement and obtaining the necessary signatures as early as possible in the project process, consistent with the procedures for managing projects. The project manager will regularly report the status of the CSSQ Agreements to the Regional Planning and Program Manager (RPPM). The CSSQ Agreement may be altered by mutual consent of the signatories. The project manager is responsible for negotiating changes to the CSSQ Agreement and forwarding them to the RPPM for approval, as appropriate.

Each project will require one or more CSSQ Agreements, as needed to effectively manage the resources required to produce the project. All projects will have a CSSQ Agreement covering the detailed design and construction of the project. More complex projects (Group B and C) have an additional CSSQ Agreement to cover preliminary design. The most complex large scale projects (Group C) will have a third CSSQ Agreement to cover the project scoping work. The Agreements are sequential and the products of one are carried forward by the next.

The three possible types of CSSQ Agreements:

- o CSSQ Agreement for Project Scoping
- o CSSQ Agreement for Preliminary Design
- o CSSQ Agreement for Detailed Design and Construction

All have the purpose of establishing a consensus among key players about project cost, schedule, scope, and of their individual roles, responsibilities, and resource needs for the work to be done.

A CSSQ Agreement is composed of:

1. The Signature Sheet

Each functional manager with project jobs to be produced in their functional area is responsible to sign the signature sheet of the CSSQ Agreement. The functional manager may delegate authority for signing the CSSQ agreement to a job manager, but remains responsible for the commitment. Signatures acknowledge an understanding of project requirements, and a) a commitment to make the necessary resources available to produce the specified product or deliverable on the noted schedule, and b) an endorsement of the appropriateness of the project cost, schedule, and

scope from a technical perspective. The project manager is not expected to dictate, but to negotiate agreement among the functional managers. If there are problems, the project manager must work to resolve them until consensus is reached and all parties can sign. If, for example, a functional manager is reluctant to sign due to lack of resources, the project manager will help arrange for the functional manager to demonstrate the resource conflict to the RPPM and the Regional Director for resolution of production priorities.

The Regional Planning and Program Manager also signs the form. Depending on the Regional Director's preference, the Regional Director may also sign the form. The RPPM's signature is a commitment to make the identified fiscal resources available on the noted schedules, as well as to indicate that the project, as defined in the CSSQ Agreement, is consistent with the region program. (See the end of this section for a prototype signature form).

2. The Project Management Plan

The Project Management Plan (PMP) is a document prepared by the project manager with input from involved functional managers for each stage of a project requiring a CSSQ Agreement. The PMP outlines the plan for producing the project within the agreed on project cost, schedule, and scope. The plan identifies job managers for each job needed to produce the next major stage of the project, and explicitly lists the activities and key products including job sub-elements for which each job manager is responsible. The plan includes consultant services required, key events, milestones, schedule of work, anticipated funds needed, any special management objectives and concerns, and quality assurance expectations. The plan is the

project manager's key management tool, and one should be prepared for all project stages even if a CSSQ Agreement is not required. For example, although the scoping stage for a Group B project does not require a CSSQ Agreement for Project Scoping, the project manager should still prepare at least an informal PMP to insure proper management control through the scoping stage. (See Section C of this Chapter for a detailed description of the PMP.)

3. The Project Report

Each CSSQ Agreement will include the appropriate project report. These range from the Initial Project Proposal (IPP) used for initial programming purposes, to the Expanded Project Proposal that refines and expands the information contained in the IPP, to the appropriate report used to obtain design approval. A listing of the CSSQ Agreements and the appropriate project reports used with them follows:

- o CSSQ Agreement for Project Scoping:
Appropriate project report is the Initial Project Proposal
- o CSSQ Agreement for Preliminary Design:
Appropriate project report is the Expanded Project Proposal, prepared in the format of the project report to be used to obtain design approval
- o CSSQ Agreement for Detailed Design and Construction:
Appropriate project report is the report used to obtain design approval, including but not limited to the following:

- Final Design Report
- Final Design Report/Final Environmental Impact Statement
- Final Design Report/Environmental Assessment
- 3R Report
- Bridge Rehabilitation Project Report

4. Project Management Allowances for the Project Manager

When a CSSQ Agreement is signed, the Regional Planning and Program Manager (RPPM) and the project manager may agree on a "project management allowance" for the project manager to use in dealing with project cost and schedule changes during that stage of the project. The allowance is not part of the project cost estimate or schedule, but is a mechanism to provide the project manager with authority to make decisions on changes within preset limits. The purpose of the allowance is to provide some latitude to the project manager in negotiating necessary project cost and schedule revisions. As long as the project changes do not exceed this allowance, the project manager has authority to negotiate the changes, knowing the RPPM will approve them. Any project CSSQ Agreement change will require formal approval by the RPPM.

This allowance can apply to a specific project or to a "sub-program" of projects such as a batch of bridge painting projects. The magnitude of the allowance will depend largely on project type and complexity, program implications, and the experience and past performance of the project manager.

5. CSSQ Agreement Changes

A change in a project's cost, schedule and/or scope will require the revision of the current CSSQ Agreement. The existing CSSQ Agreement remains in effect until it is amended. Whenever a CSSQ Agreement must be amended, the RPPM must review the impact of the proposed change on other projects in the program and make any necessary changes to them.

Changes to projects, and thus their CSSQ Agreements, can be caused by many factors which may or may not be related to the project or its processing or production. This includes project cost, schedule or scope changes, funding source or other program changes, production problems, permit delays, etc. While the PPM system is designed to minimize changes through early and broad based planning and coordination, the reality that changes will inevitably occur is fully recognized. The CSSQ Agreement change process is designed to deal effectively with necessary changes and minimize disruption of the region and statewide programs.

Generally, all CSSQ Agreement changes are handled in a similar manner. The PM is the focal point of the change process. The source or initiator of the proposed change must contact the PM to start the change process. The initiator is responsible for clearly defining what is changing, why it is changing, and, if possible, what option may exist within the initiator's authority for accommodating the change.

The process of change begins with a discussion of the proposed change by the initiator and the PM. They must determine if the proposed change will require a full

revision of the CSSQ Agreement, or if it can be accommodated through simple notification. This disposition depends on the effect of the proposed change on the CSSQ Agreement signers. If the proposed change is simply a cost or technical change (e.g. a design modification) that does not affect the job descriptions or schedules, then the PM can resolve the proposed change by sending a notification explaining the change to the signers. If only one or two jobs are affected by the proposed change, then the PM can resolve it by negotiating revised job descriptions with, and obtaining signatures from, the signers responsible for those affected jobs, and simply notifying the remaining signers of the change. However, if the proposed change will affect the commitments of the CSSQ Agreement signers, then the PM must negotiate a change to the CSSQ Agreement.

The PM prepares any amended CSSQ Agreement by analyzing the probable effects of the proposed change on the existing CSSQ Agreement, and then discussing it with all signers, including the RPPM. The PM may call a meeting, if necessary, to assist in reaching consensus among the project team on the proposed change. Once consensus is reached, the PM essentially repeats the process used before to prepare the CSSQ Agreement: 1) finalize the amended CSSQ agreement, 2) obtain project team signatures, and 3) forward the amended CSSQ Agreement to the RPPM. The RPPM assesses the impact of the change on the region's program and either accepts or elevates the proposed amended CSSQ Agreement to the Regional Director. Note that the PM and RPPM are in close contact throughout the change process, and as a change to one project may affect other projects on the program, the RPPM will have to prepare a complete package of all changes required in the program and/or

other projects' CSSQ Agreements to accommodate the proposed change. The Regional Director approves, rejects, or seeks a decision from the Office of Planning and Program Management. The RPPM implements the ultimate decision by making the necessary adjustments to the program.

In some cases a "conflict" may arise when trying to reach agreement on a proposed change. This occurs when the project manager cannot secure agreement among all signers of the CSSQ Agreement. The conflict is elevated through the decision-making hierarchy according to the "approving CSSQ changes" chart at the end of this section. Decisions are expected to be made at the lowest possible level, many through informal negotiations before formal steps have to be taken.

Examples. Several examples of how changes to CSSQ Agreements are progressed are given below:

- o The Office of Planning and Program Management notifies the RPPM that the amount of funding for bridge rehabilitation projects in the 2nd year of the region capital program has been reduced. It appears only 2 of the 3 bridge projects programmed for that year will be funded.

Resolution. The RPPM consults with the Regional Director for opinions on priorities, project managers for insight on project status and likelihood of problems that might result, and functional managers for information on workload problems that might bear on the choice. The RPPM makes a tentative choice on which project should be delayed to accommodate the funding change. The project managers then consult with the affected

functional and job managers, amend the CSSQ Agreements accordingly, and obtain needed signatures. The RPPM then makes the appropriate program adjustments and gives copies of the amendment to all Agreement signers.

- o The Regional Design Engineer advises the project manager that the scope of a bridge rehabilitation project scheduled for letting in the third year of the Capital Program has to be changed. Detailed investigations indicate the bridge cannot be rehabilitated and must be replaced. This has been confirmed through a review initiated by the Design Engineer. As a result it is estimated that the cost will double and the design schedule will be extended by 18 months.

Resolution. Once satisfied that the scope change can be neither avoided nor mitigated, the project manager informs the RPPM of the change and discusses the possible program actions. The RPPM analyzes the program options, figuring how the funding slot in the third year might be filled due to this information, also seeing where this project might be placed in the program due to the change. Perhaps it will slide to late in the fourth or fifth year or, due to its relative priority, may slide off the five-year program altogether. The end result is a new program slot (schedule) for the project which the project manager uses in communicating and negotiating with all Agreement signers. The RPPM must then fill the "gap" created in the third year with another project.

- o A job manager in the Regional Soils Engineer's Office finds that the soils investigation report is going to take at least 3 months longer to produce than was promised to the Regional Structures Engineer.

Resolution. Although the Regional Soils Engineer was not a signer of the CSSQ Agreement in this case, the soils work is a part of the Regional Structures Engineer's job in the CSSQ Agreement. Accordingly, the Regional Soils Engineer discusses the situation with the Regional Structures Engineer. Finding no way of shifting schedules to allow the soils report to be completed on schedule, the Regional Structures Engineer contacts the project manager to discuss the situation. As a result, the project manager revises the CSSQ Agreement to reflect the delay, discusses the amendment with the RPPM and any other job managers affected by the change, and obtains signatures for the amended CSSQ Agreement. The RPPM then modifies the program accordingly.

This is a prototype of the CSSQ Agreement signature sheet.
It is subject to change with experience.

CSSQ AGREEMENT SIGNATURE SHEET

Project Identification Number: _____

Project Description: _____

This is a: [] CSSQ Agreement for Project Scoping
[] CSSQ Agreement for Preliminary Design
[] CSSQ Agreement for Detailed Design and
Construction

The signers agree to deliver this project consistent with the project management plan and the project cost, schedule, and scope identified in these documents.

- Project Management Plan dated __/__/__
- Initial Project Proposal/Expanded Project Proposal/Design Report dated __/__/__ (circle one)

Agreement Signers:

Project Manager: _____ Unit _____ Date _____

Reg. Plng. & Prog. Mngr.: _____ Date _____

Functional Area Managers:

- Project Scoping _____ Unit _____ Signature _____ Date _____

- Highway Design _____ Unit _____ Signature _____ Date _____

- Structure Design _____ Unit _____ Signature _____ Date _____

- Environmental Analysis _____ Unit _____ Signature _____ Date _____

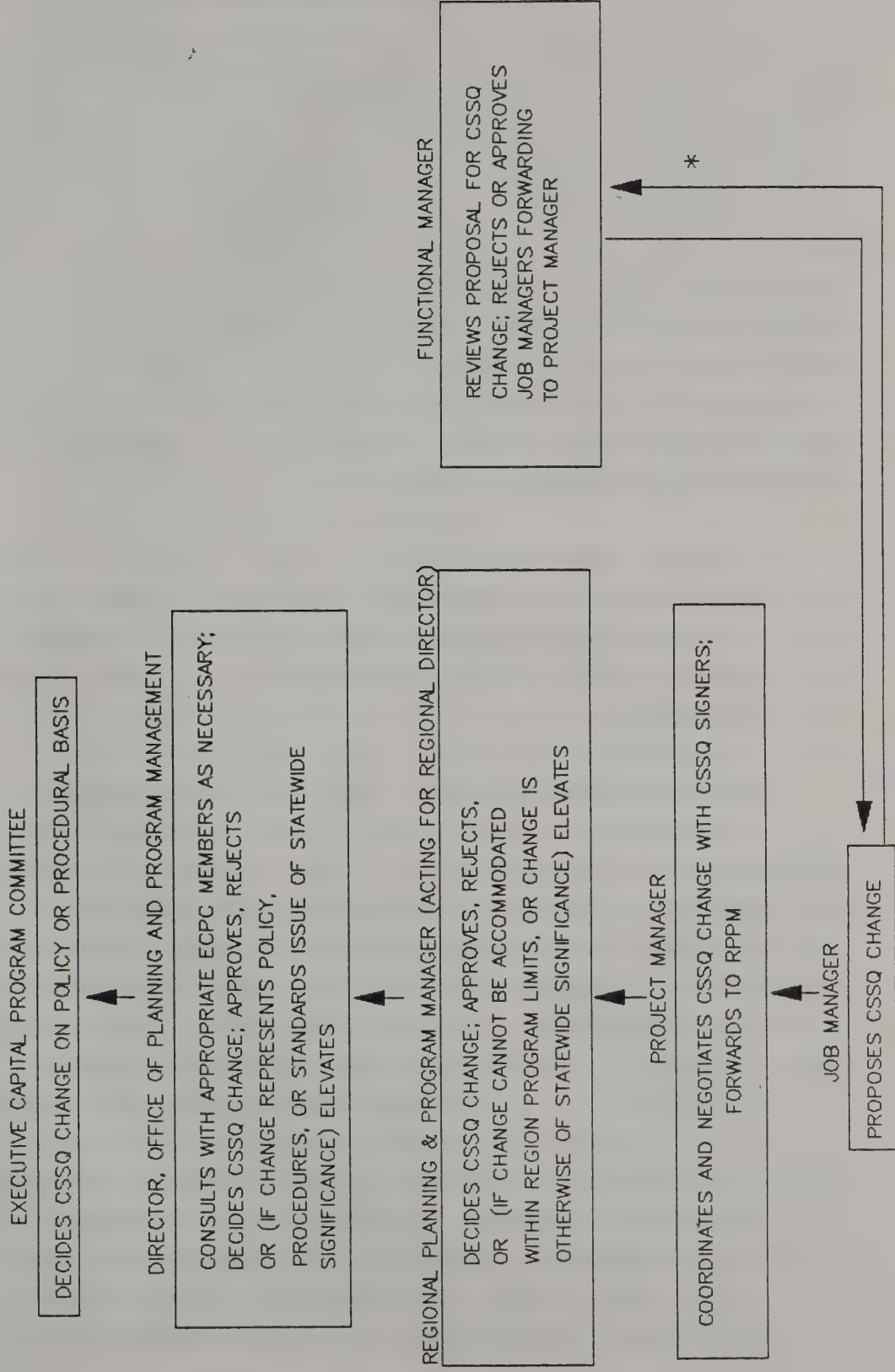
- Real Estate Acquisition _____ Unit _____ Signature _____ Date _____

- Consultant Management _____ Unit _____ Signature _____ Date _____

- Construction Supervision _____ Unit _____ Signature _____ Date _____

- Other(s) _____ Unit _____ Signature _____ Date _____

STEPS IN APPROVING CSSQ CHANGES



C. The Project Management Plan

The Project Management Plan is a document prepared by the project manager that summarizes detailed project information and outlines the plan for producing and delivering the project. The plan details a comprehensive sequencing of jobs based upon participants' estimates and assumptions of their ability to produce those jobs. While the job description section must focus on the activities needed in the next stage of project production, the PM must ensure that the overall plan considers the entire life of the project. A prototype form for the Project Management Plan follows this section. The Project Management Plan includes the following elements:

- o **Project Identification.** This section provides pertinent information regarding the project location, environmental classification, program goal type and a brief description of the proposed project.
- o **Job Responsibilities.** This section identifies the jobs and the job managers for the project. The jobs are inclusive in that every activity needed to produce the project falls under one of the jobs. The specific activities, including reviews, key products and the final event for which each job manager is responsible are listed in the plan. How a project is split into jobs and job sub-elements is determined by the project manager and job managers. Job managers are responsible for obtaining the assistance and securing deliverables from other specialty areas or outside parties producing job sub-elements. These deliverables are usually relatively minor components, yet needed in order to complete the job. This means for example, that the

job manager for highway design may be responsible for obtaining work from the regional survey, landscape architecture, real estate groups, etc. Conversely, if Traffic and Safety or Real Estate work is major, it would be a job with its own job manager. Similarly, most reviews and contract processing to be done by main office units should be included as elements of a job manager's job description, and treated as separate jobs only if special or unusual handling is required. In any case, the job description must be clear and sufficiently detailed to allow for continuity even if the project manager changes. Job descriptions must not include 'qualifier' statements as it is recognized that all job descriptions are based on assumptions which may change.

- o **Consultant Services Required.** This section lists project jobs or activities requiring consultant services. Job managers are assigned to secure and manage the consultant(s). The project manager must assure adequate lead time is included in the schedule for obtaining the consultant services.
- o **Funding.** This section identifies all fund sources (federal, state, local and/or other) and costs for the project. It identifies when funds must be obtained from the Office of Planning and Program Management by the Regional Planning and Program Manager for project work to continue, as well as any special funding requirements.
- o **Work Schedule.** This section provides a Gantt Chart that displays the proposed schedule for each of the project jobs. It reflects physical and fiscal production considerations of all jobs and deliverables for the project. Key milestones are

determined by the project manager and the involved functional and job managers and are listed. These milestones may be for completion of key activities, meetings, reviews, authorizations, etc.

- o **Management Objectives/Concerns.** This is a brief narrative describing special management objectives or concerns and presents strategies for dealing with them. Following are examples of what this section might describe: Important political commitments; special reporting requirements; management priorities regarding cost, schedule or scope; procedural variances; and issues of statewide significance. This information is used to guide decision-making and trade-offs as choices arise during production.
- o **Quality Assurance Expectations.** This provides any special instructions on how quality assurance will be achieved on the project. This section identifies whether and when region and main office reviews, coordination meetings, quality assurance audits, cost analysis studies, and post construction reviews will be conducted as well as outside agency reviews.
- o **Management Plan Attachments.** This includes supporting documents, such as PAC II or Cost Estimating System printouts, and any amendments with dates.

This is a prototype of the Project Management Plan. It is expected to change with experience.

PROJECT MANAGEMENT PLAN

Project Manager: _____
Name Unit Phone

Original date ____/____/____
Revision date ____/____/____ Revision # _____

Type of CSSQA: [] Project Scoping
[] Preliminary Design
[] Detailed Design and Construction

A. PROJECT IDENTIFICATION

PIN: _____ Name: _____

County: _____ Town: _____

Route: _____ SH/FA System: _____

BIN(s): _____

Environmental Classification: NEPA _____
SEQR _____

Program Goal Type: [] Pavement [] Bridge [] Safety
[] Capacity [] Appurtenance [] Other
(describe)

Description of Proposed Project:

B. JOB RESPONSIBILITIES

The jobs for this project are meant to be inclusive. That is, every activity needed to produce the project, as described in the attached project proposal or design report, will fall into one of the listed jobs. Job managers are responsible for all of the activities and deliverables necessary to complete their job. This responsibility includes obtaining the assistance of other functional specialty areas for job sub-elements and activities considered necessary to complete the job.

Job managers are responsible for needed quality control steps and timely delivery of the plans, specifications and estimates for their specialty and the activities performed by other functional specialists contributing to the job. The jobs for this project are: -

Project Scoping

Job Manager: _____

name	office	phone
------	--------	-------

Activities, Key Products, and Final Event: _____

Highway Design

Job Manager: _____

Activities, Key Products, and Final Event: _____

Structure Design

Job Manager: _____

Activities, Key Products, and Final Event: _____

Environmental Analysis

Job Manager: _____

Activities, Key Products, and Final Event: _____

Real Estate Acquisition

Job Manager: _____

Activities, Key Products, and Final Event: _____

Consultant Management

Job Manager: _____

Activities, Key Products, and Final Event: _____

Construction Supervision

Job Manager: _____

Activities, Key Products, and Final Event: _____

Other(s): _____

Job Manager: _____

Activities, Key Products, and Final Event: _____

C. CONSULTANT SERVICES REQUIRED:

Project Activity:	Start Date:	Estimated Fee:
_____	____/____/____	_____
_____	____/____/____	_____
_____	____/____/____	_____

D. FUNDING (in 19__ dollars)

	Costs			Obligation Date
Fund Source:	_____	_____	_____	
Scoping:	_____	_____	_____	____/____/____
Prel. Design:	_____	_____	_____	____/____/____
Detailed Design:	_____	_____	_____	____/____/____
Right-of-way				
Incids:	_____	_____	_____	____/____/____
Acquis:	_____	_____	_____	____/____/____
Const. Cost				
Highway:	_____	_____	_____	____/____/____
Structure:	_____	_____	_____	____/____/____
RR Force Acct:	_____	_____	_____	____/____/____
Utilities:	_____	_____	_____	____/____/____
Const. Insp:	_____	_____	_____	____/____/____
TOTALS	_____	_____	_____ = _____	

(total project cost)

E. WORK SCHEDULE:

Gantt Chart of Project Jobs

Project Job

month/yr.

Key Project Milestones

1. Project Scoping Completion Date: _____
2. Receipt of Design Approval: _____
3. ADP Completion Date: _____
4. PS&E Submission to DQAB: _____
5. Letting Date: _____
6. Begin Construction: _____
7. Complete Construction: _____

F. MANAGEMENT OBJECTIVES/CONCERNS:

The special management objectives or concerns for this project are: (list)

G. QUALITY ASSURANCE EXPECTATIONS:

It is expected that all work will be done consistent with Department policies, procedures and technical standards.

In addition, the following special requirements apply to this project: (list)

H. MANAGEMENT PLAN ATTACHMENTS: (supporting documents, amendments with dates, etc. - list

D. Project Cost Estimates

At any point during scoping, design and construction, the estimated project cost must be the most accurate estimate possible given the information available at the time. The estimated project cost must include all costs expected to be incurred by the time project construction is complete. It is expected that as many estimates will exceed the final cost as will be under; with similar errors of estimates in either case. The quality of cost estimating must be judged on this basis, over the entire program, rather than on individual project examples.

1. Unforeseen Events Affecting Project Cost Estimate

There is always the possibility that unforeseen events will change the factors on which the project cost estimates are based. "Project cost" represents all costs to be incurred in a project's life, including scoping, preliminary engineering, construction and construction inspection, ROW, force account and utilities. The types of unforeseen events affecting project cost estimates can be grouped into the following three categories:

- o Item prices may change. This is usually the result of inflation and market conditions. An inflation factor is currently applied annually to the capital program on a statewide basis. Individual project cost estimates are in current dollars (at the time of estimate).
- o Item quantities may change. The Department's current cost estimating procedures accounts for this possibility by building into the estimate

contingencies for quantity changes for the project design elements identified at the time of the estimate.

- o Scope may change. Unanticipated project scope changes alter the project design elements or items themselves. Scope changes have the most disruptive effect on program budgets and usually impact schedules as well. Professional judgement based on experience must be relied on to assure the most stable project scope at the time of estimate, buttressed with the best risk analysis techniques available, formal or informal.

The new program and project management system incorporates the Department's current approach to project cost estimating for potential item price and quantity changes. For changes in scope, the negotiations among functional managers leading to CSSQ Agreements will bring to bear the Department's best professional judgement in an organized and explicit fashion. A consensus will be reached on the most likely project scope. This will be based on the collective experience and skills of the project team (i.e. CSSQ Agreement signatories).

2. Project Cost Estimating Milestones

The following is a general description of project cost estimating at key milestones in the project production process. Although the following descriptions deal primarily with construction cost estimates, other items that comprise project cost should also be continuously refined and updated.

- a. **Initial Project Proposal:** The construction cost estimate at this stage is usually made without benefit of detailed field investigations or project design details. Rules of thumb based on experience will be used (cost per mile, cost per square foot, etc.). The estimate should consider the problem and visualize a reasonable solution as comprehensively as possible. It must be understood that the degree of accuracy of this cost estimate will vary considerably by complexity of project and the extent of unknowns. Nevertheless, it is the most accurate cost estimate possible for the project scope most reasonably expected at construction completion.
- b. **Expanded Project Proposal:** At this stage, major design elements for the simplest projects can be identified and quantities estimated with a fair degree of certainty. Project scoping at this stage benefits from field investigations and detailed scoping activities involving representatives from all functional areas with project interests or responsibilities. The current department project cost estimating system referred to above is used to develop estimates that include an appropriate item quantity contingency. Again, the cost estimate is the most accurate possible given available information.
- c. **Draft Design Report:** The project scope at this point has been refined to reflect the results of Design Phase I. Cost estimates are refined appropriately.
- d. **Design Approval Document:** At this point, field investigations and condition data collection are essentially complete. Preliminary design has been accomplished and design approval is imminent. At

this point, the CSSQ Agreement for Detailed Design and Construction is signed. Project scope is not expected to change from then on, except through the refinement of design details.

e. **PS&E:** The project cost estimate is refined throughout detailed design, culminating with the Engineer's Estimate for PS&E. The Engineer's Estimate is the project designers' best estimate of a reasonable cost for doing the contract work under free, competitive market conditions, reflecting the conditions expected to prevail at the time the work is to be done. "Reasonable" is currently interpreted in the department to mean the median of the range of expected bids.

f. **Contract Award:** The construction cost embodied in the awarded construction contract is still an estimate. Unanticipated field conditions may require plan revisions that mean cost overruns. Currently, obligated construction funds include a pre-determined percentage of the awarded construction cost, ranging from 3 percent to 7 percent (developed by the Office of Planning and Program Management based on Region experience), to accommodate such overruns. This practice will be continued until further notice, although the project manager and the engineer-in-charge will work to minimize such overruns.

E. Managing Projects of Statewide Significance

Statewide significance applies to projects identified by Regional Directors and the Office of Planning and Program Management as falling into one of the following categories:

- o Commitments made by or to the Governor
- o Commitments made to the legislature as part of the statewide transportation capital program
- o Commitments made by or to the New York Congressional Delegation
- o Projects of such high cost or uncertain contingencies that cost or schedule changes could significantly affect the Region's program commitments
- o Any project where the risk of not meeting cost, schedule, or scope commitments is unacceptable to the Commissioner.

These projects are high in profile, and delivering them takes on added importance to the Department. Generally, such projects are produced in the same manner as others, except some extra management measures are taken to ensure that the projects stay on track under appropriate control.

Usually, projects will be identified as being of statewide significance at the time the Initial Project Proposal is prepared and the project is put on the program. However, any project can become of statewide significance during any project stage due to new or changed political, environmental, funding, or other conditions. The Office of Planning and Program Management is responsible for issuing guidelines for identifying projects of statewide significance.

Once the project has been identified as being of statewide significance, the Office of Planning and Program Management (OPPM) and the Regional Director (or RPPM) must decide what, if any, special project management actions will apply to the project. These actions may range from minimal special requirements to managing the project with a project management team, such as is being done with the Route 9A project.

Special actions may include more frequent or additional project status reports, additional milestones or events requiring main office approvals, and/or selection of a special spokesperson(s) for any statements made to the public and the press about the project.

For most projects of statewide significance, the only special management action will be in monitoring progress. That is, OPPM will track the project along with the region to ensure delivery commitments are being met.

Once an understanding between the RPPM and OPPM has been reached on any special project management actions, these actions are listed in the Management Objectives/Concerns section of the Project Management Plan. (See Chapter III, Section C. for a full discussion of the Project Management Plan).

OPPM is given a copy of the CSSQ Agreement, including the Project Management Plan, for every project designated as of statewide significance. The RPPM and OPPM also discuss and reach an understanding of any other concerns/issues not specifically addressed in the Project Management Plan. They also reach an understanding as to how they will inform each other concerning political changes, executive management actions, and other events that may affect the region's capital program. It is anticipated that the Office of Planning and Program Management will closely track all projects of statewide significance.

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